

Raymarine®

MARINE ELECTRONICS 2012

2012

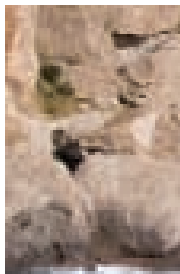
RAYMARINE MARINE ELECTRONICS 2012



RADAR • NAVIGATION AIDS • SONAR • INSTRUMENTS • AUTOPILOTS • THERMAL IMAGING • COMMUNICATIONS • SATELLITE TV • SOFTWARE • LIFETAG • SYSTEMS

Raymarine®

INNOVATION • QUALITY • TRUST





WELCOME TO RAYMARINE

We hope you enjoy browsing through the range of equipment designed specifically to help you enjoy your time afloat to the full.

MARINE SPECIALISTS

Raymarine is proud to specialise in marine electronics; this focus ensures we offer equipment that combines industry-leading technology with intuitive robust design, ideally suited to withstand the range of marine conditions that would spell disaster to lesser electronic ranges. Raymarine's world-class test facilities put products through their paces on your behalf; we shake, bake, freeze and flood products and components to their limit so you don't have to find out what those limits are the hard way. Our test boat 'Raymariner' and dedicated team of testers around the world spend thousands of hours at sea to ensure that Raymarine products achieve the high standards set for them and expected by you.

MARINE KNOWLEDGE

Raymarine's interactive knowledge bank is available to you online 24/7 every single day of the year at **Raymarine.com**. We store all questions and answers in Raymarine's solution database; dynamic information management ensures that the most frequently asked questions and popular subjects are always at the top – you can also **search** by product, category, keywords, or phrases. If you still can't find the answer you are looking for, click on the **Ask Raymarine** tab to contact our knowledgeable product experts direct.

MARINE PEACE OF MIND FOR YOU

Raymarine's service commitment of outstanding warranty and technical support now offers you even more; Standard Limited Warranty can become Extended Limited Warranty by the simple action of registering your new product on line, extending two years warranty into three years for FREE. And if your Raymarine equipment is bought from and fitted by a Raymarine Authorised Service Agent then you could be covered by the Onboard Limited Warranty Service – please go to page 108 of this brochure for more details or visit **www.raymarine.com** for additional information.

AROUND THE WORLD

Day sailing, a weekend's fishing, coastal cruising, powerboat rally, the call of blue water, ocean racing, Raymarine's worldwide network is there for you.

SEE YOU ON THE WATER!

PHOTOS (TOP TO BOTTOM) MULDER; JOE MCCARTHY; TARGA; SOUTHERLY; AZIMUT (MAIN PHOTO)

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GOOD TO LOOK AT. HIGHLY INTELLIGENT. LOVE TO NETWORK. NEW e SERIES DISPLAYS.

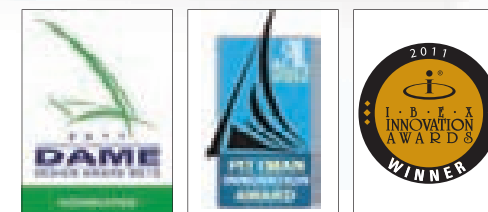
New e Series multifunction displays – for RIBs, sail boats, fishing and powered craft. With a touch-screen interface backed up with easy-to-use controls and a whole host of features and connectivity, **new e Series displays** are there for you – make them your own.

- NEW Raymarine Viewer repeater app (for Apple iPhone 4 and above and Apple iPad 1 and 2).
- Great connectivity – access information and music on the go and there's a handy remote control too (optional).
- HybridTouch™ displays with dual-core processors and dedicated graphics power for no-compromise performance.



NEW

New look... new e Series display's helm-friendly industrial design breaks away from box-like marine electronics, and offers a clean, unobtrusive display solution that looks great on any helm. A smart new shape for marine displays, the sleek, low-profile, bezel offers maximum display size with minimum footprint. The rugged and handsome design is complemented by flush, easy-press buttons and "hidden" memory card slots along the right hand side. An all new UniController offers precision control of the joystick cursor, rotary adjustments, and menu commands. Available with or without embedded cartography and built-in Sonar.





LIGHTHOUSE™ USER INTERFACE SHOWS YOU THE WAY

Designed for the way boaters think, Raymarine's exclusive LightHouse User Interface (UI), offers an incredibly easy-to-use navigation experience. LightHouse intuitively places frequently used navigation functions right at your fingertips. With LightHouse you will quickly become an expert, thanks to an easy-to-use home screen of all your **new e Series** apps and custom navigation pages. Just swipe the home screen left or right for immediate access to the entire library of **new e Series** capabilities.

LightHouse takes full advantage of Raymarine HybridTouch™ technology, giving you a choice between touch screen operation or full keypad control when seas are rough.

Easy to personalise

Create your own custom navigation pages by simply dragging and dropping the application to the desired location on the page. The **new e Series displays** LightHouse user interface also guides you through setup and configuration with an easy to use start up wizard.





PHOTO: JOE MCCARTHY

GPS chartplotter

The **new e Series displays** are ready-to-navigate with a built-in high sensitivity 50 channel GPS sensor and high quality Navionics charts on a supplied microSD card. Experience rich chart graphics and 3D textures along with super-fast screen redraws using Navionics TurboView technology. A new Easy View mode enlarges chart text, spot soundings and icons on every range scale for distance viewing.



New flexi suncover

The flexible silicone suncover offers secure protection when the displays are not in use.

Extremely fast – x3

A powerful multitasker, the **new e and c Series displays** are equipped with three processors in the form of a dual core main processor and a third dedicated graphics processor. Enjoy stunning 3D graphics, brilliant video, and instantaneous chart redraws. This is marine processing power taken to a whole new level.



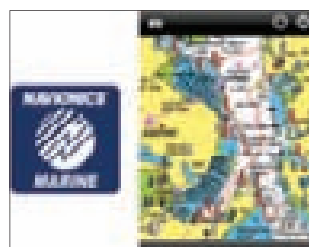
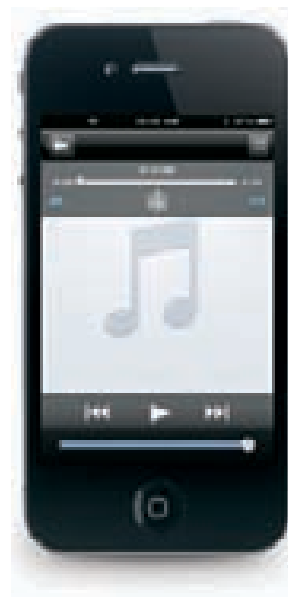
iPHONE AND iPAD VIEWER

Transform your Apple iPhone 4 (and above), or iPad 1 and 2 into a remote viewer! Using the **new e and c Series displays** built-in Wi-Fi and the Raymarine Viewer app you can view the entire **new e and c Series displays** simultaneously, thanks to video streaming capability. View charts, sonar, radar, and thermal night vision from anywhere onboard, right in the palm of your hand. Connecting is easy! Just go to the Apple iTunes App store and download the free Raymarine Viewer to get started.



Superior viewing

The **new e and c Series displays** are equipped with a super bright widescreen sunlight viewable screen that provides maximum visibility from every angle. Advanced LED backlighting offers low power consumption and delivers vibrant colour and contrast.



Simulated images

BLUETOOTH

Enjoy your favorite tracks direct from the helm using Bluetooth technology to remotely control the music functions on your Bluetooth phone (using AVRCP 1.2 or above), iPod Touch, iPhone, or iPad. Simply connect your Bluetooth phone, iPod Touch, iPhone, or iPad to the vessel's audio system with a dock or auxiliary cable and stow it in a safe place. Next, pair to your device using the **new e and c Series displays** built-in Bluetooth technology. Play and pause tracks, skip forwards and backwards in your play list, all from your display. It's that simple, and no complicated accessories or expensive hubs are required.



RCU-3 Remote control (optional accessory). Stay in command of the **new e and c Series displays** without letting go of the wheel. The optional RCU-3 Steering Wheel Remote gives you simple access from the steering wheel to frequently used functions while underway. Change range scales, control your music, switch between apps, and even mark a waypoint, it's all possible with the wireless RCU-3 remote. Don't need the RCU-3 on the wheel? You can attach the RCU-3 to the supplied lanyard and transform the RCU-3 into a convenient handheld remote control for the **new e Series displays**. Bluetooth wireless technology makes configuring the RCU-3 remote easy and gives wireless control of the **new e and c Series displays** from up to 30 feet from the display.

Sync with Navionics mobile

Instantly synchronize waypoint locations, favourite fishing spots and route plans between the **new e Series displays** and the Navionics Mobile app. Plan your next voyage on your iPhone or iPad and then wirelessly sync your route plans using the new e's built in Wi-Fi. Just go to the Apple iTunes App store and download the Navionics Mobile app.

e7 Sport Optic friendly display – avoid screen blackouts

The **e7** display is engineered with an advanced coating that virtually eliminates the "black out" effect caused when viewing marine displays with polarized sunglasses. No more tilting your head or removing your sunglasses to view the display, Raymarine's new Sport Optic Friendly technology allows you to view the **e7** screen from any angle while wearing your favourite sport sunglasses.



HD DIGITAL COLOR RADAR, THERMAL IMAGING AND VIDEO

Video integration

Connect with docking or underwater cameras using the **new e and c Series displays** video input. Enjoy crisp, clear views of any video source thanks to the **new e and c Series displays** high resolution WVGA display.

Video connections

New e Series displays: rear 1x video in and 1x video out plus 1x video in with power cable.

New c Series displays: 1x video in with power cable.

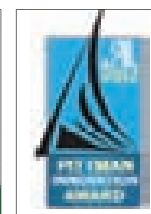
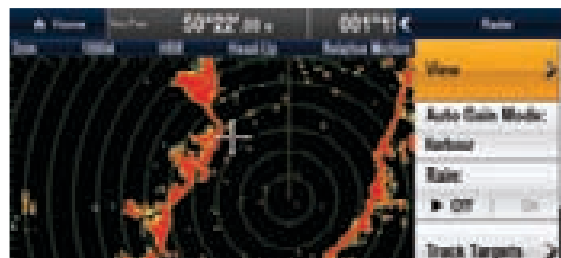




PHOTO COURTESY SESSA

Radar

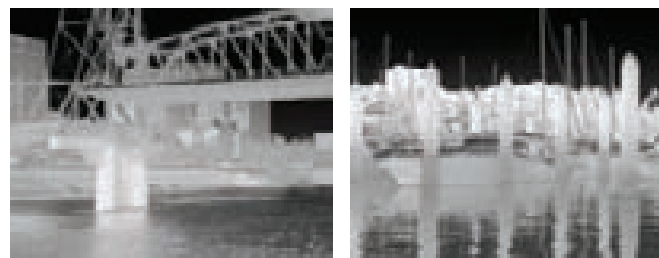
Network the **new e and c Series displays** to Raymarine radome radar antennas for unsurpassed clarity and target detection. Utilising exclusive HD Color signal processing technology, Raymarine radars deliver superior long and short range target detection, including Raymarine's exclusive Bird Mode target tracking. Bird Mode tracks flocks of seabirds, giving fishermen the information they need to locate schools of fish. Navigate with radar directly from the chartplotter application using radar overlay or activate Dual Range mode for both short range and long range radar view.



Note: Optional electronic heading sensor or autopilot required for radar overlay.

See in the dark with thermal night vision

Navigating at night just got easier with the **new e and c Series displays** and Raymarine T Series thermal night vision cameras. Engineered with FLIR thermal imaging technology, the **new e and c Series displays** and T Series cameras allow you to navigate safely and confidently—seeing obstructions, buoys, and other vessels in total darkness. Take the stress out of nighttime navigation with the **new e and c Series displays** touch screen thermal camera controls and access thermal images alongside radar or chartplotting applications.



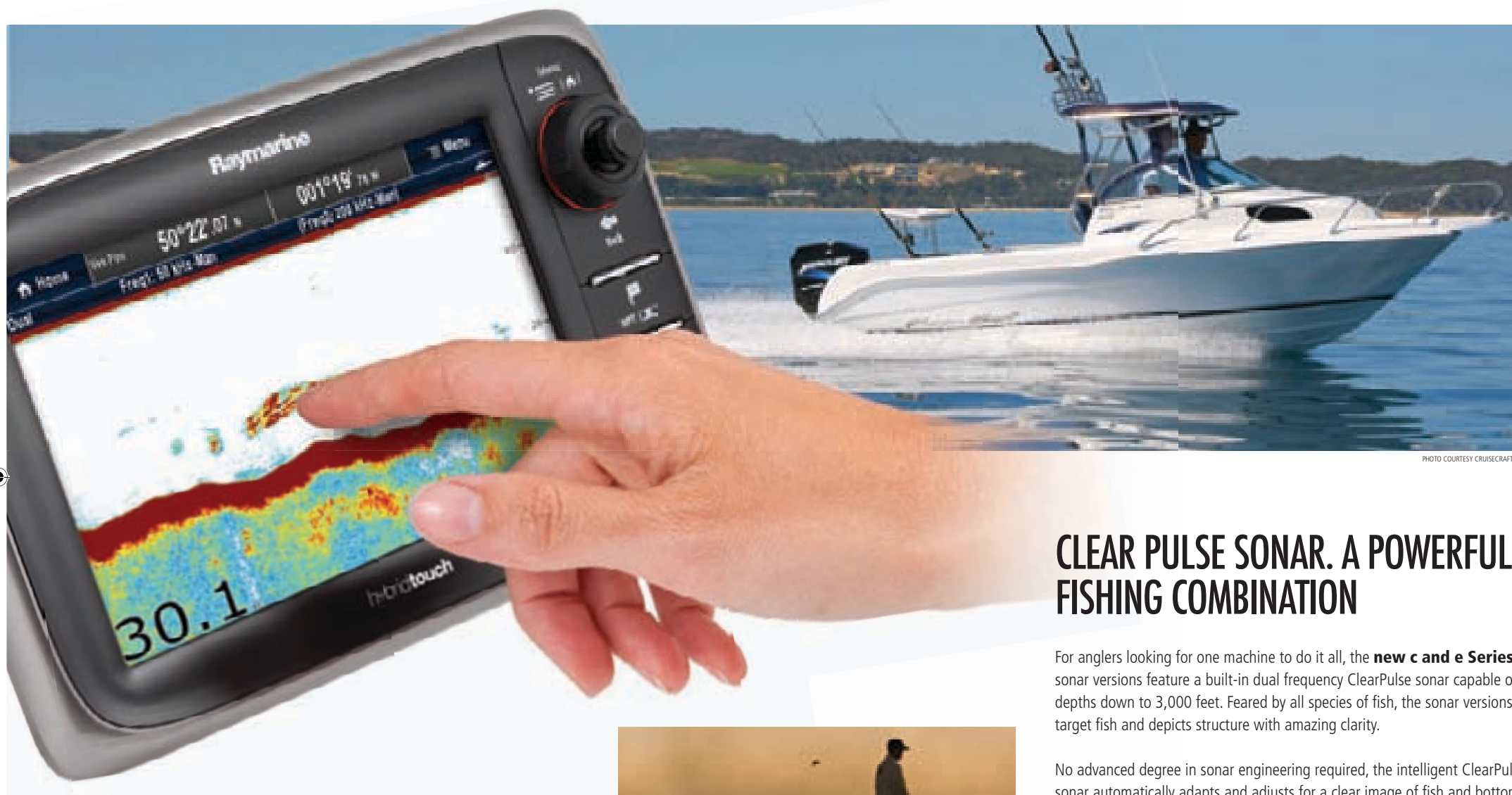


PHOTO COURTESY CRUISECRRAFT

CLEAR PULSE SONAR. A POWERFUL FISHING COMBINATION

For anglers looking for one machine to do it all, the **new c and e Series** sonar versions feature a built-in dual frequency ClearPulse sonar capable of depths down to 3,000 feet. Feared by all species of fish, the sonar versions target fish and depicts structure with amazing clarity.

No advanced degree in sonar engineering required, the intelligent ClearPulse sonar automatically adapts and adjusts for a clear image of fish and bottom contours without any complicated controls.

Trolling motor ready

Connect the **new c and e Series** sonar versions (e7D/e97/e127/c97/c127) to optional thru-hull, in-hull, or transom transducers. Bass anglers can take advantage of Minn Kota's Universal Sonar trolling motor transducer using an optional sonar version transducer adapter cable.

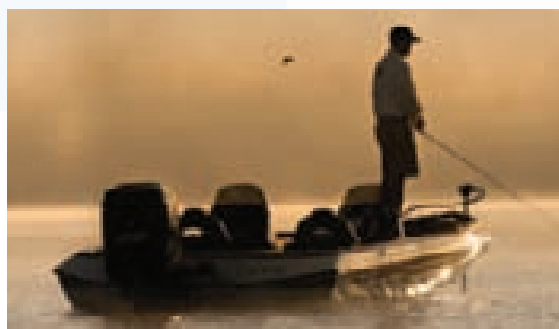
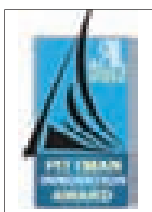
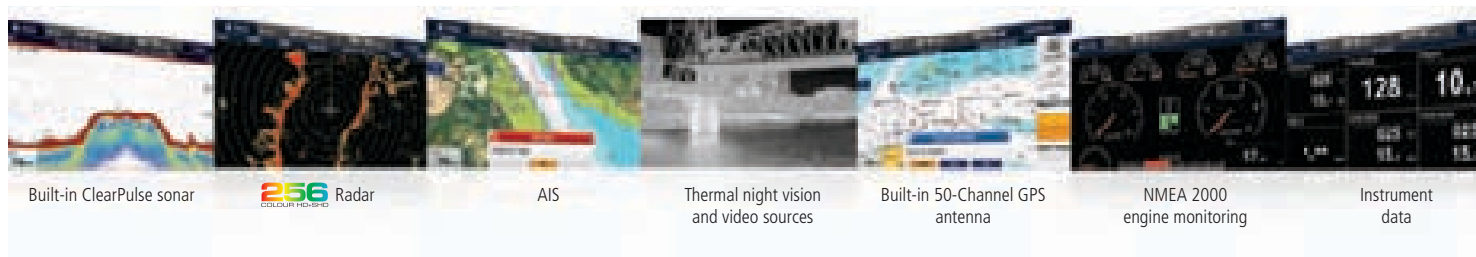


PHOTO: COURTESY OF GENMAR



Network up to six displays



Autopilot



Media player controls



Stream to Apple iOS devices



Wheel mounted remote control



PHOTO: UNESSE



PHOTO: JOE MCCARTHY



NEW! THIRD GENERATION c SERIES MULTIFUNCTION DISPLAYS

Ideal for power and sail boats, the all new third generation **new c Series** multifunction displays (MFDs) are designed to deliver uncompromising performance, superb networking capabilities, and a superior user experience.

Built-in Wi-Fi networking enables you to stream video from your **new c Series display** to Apple iPhone and iPad devices for the convenience of a wireless repeater anywhere onboard. The free RayView App for Raymarine Wireless Multifunction Displays is available in the Apple iTunes store.





Display choices

New c Series displays are available in 9.0" (c95/c97) or 12.1" (c125/c127) widescreen LCD formats with LED backlighting that is both super bright yet energy saving – up to 40% less than previous generation multifunction displays! Superior thermal management properties prevent darkening or screen blackouts at high temperatures. The bonded LCD screen eliminates condensation or contamination on the inside of the display, and maximises colour and contrast by preventing unwanted reflections.

New c Series Features

- 9.0" or 12.1" sunlight viewable LCD displays with LED backlighting.
- Built-in high-sensitivity GPS receiver.
- Optional built-in ClearPulse sonar.
- Available with or without Navionics ready-to-navigate charts on microSD card.
- Wi-Fi video streaming and waypoint synchronization with iPhone and iPad mobile devices.
- Bluetooth connectivity for optional RCU-3 remote control and multimedia control.
- LightHouse user interface is extremely intuitive and places commonly used features and functions where they are easily accessed.
- Dual-core main processor and dedicated graphics co-processor for amazing speed and performance.
- Composite video input for marine camera, thermal imager or entertainment source.
- Expandable networking up to 6 displays using SeaTalk^{hs} networking.
- Mix and match any combination of **new c or e Series displays**
- Works with Raymarine radar, ClearPulse sonar, thermal night vision systems, AIS receivers, instruments, autopilots and more.





PHOTO COURTESY RIVIERA

UPGRADE OR REFIT TO NEW **e** OR **c** SERIES DISPLAYS

If you are looking to refit your boat or upgrade your current Raymarine displays to the **new e or c Series displays**, we can help make life easier for you!

New e or c Series displays are available with optional easy-fit bezels, complete with mounting plates, for use when replacing C/E 80/120 Classic or C/E 90/120 Widescreen displays, so there is no need to cut new holes or fit a new dash.

Optional easy-fit bezels available to upgrade from C90W, C120W, E90W and E120W

Optional easy-fit bezels available to upgrade from C/E 80 and C/E 120 Classic



Upgrading is simple – using optional easy-fit bezels

1. Remove your old Raymarine display from the dash.
2. Screw the new mounting plate (supplied pre-drilled) to the old fixing holes.
3. Remove the outer bezel from your **new e or c Series display**.
4. Fit the NEW display into the mounting plate and screw down.
5. Clip the new easy-fit bezel on to the NEW display.

Stand back and admire your handiwork!

NEW c/e SERIES SPECIFICATIONS

Nominal voltage:

c95/c97/c125/c127/e95/e97/e125/e127: 12/24 v DC

e7/e7D: 13.8v DC

Operating voltage range:

c95/c97/c125/c127/e95/e97/e125/e127: 10.8 – 31.2 v DC

e7/e7D: 10.2 – 15.6 v DC

Power consumption (at full brightness):

c95/c97/e95/e97: 16W maximum

c125/c127/e125/e127: 36W maximum

e7/e7D: 10.2: 13.2W

Display:

e7/e7D: 7" TFT backlit LED

c95/c97/e95/e97: 9" TFT backlit LED

c125/c127/e125/e127: 12.1" TFT backlit LED

c95/c97/e7/e7D/e95/e97: (800 x 480 pixels)

c125/c127/e125/e127 (1280 x 800 pixels)

Viewing angles:

e7/e7D: 70° left/right and 70°/50° top/bottom

c95/c97/c125/c127/e95/e97/e125/e127: 80° left/right and

80°/60° top/bottom

Weight:

e7: 1.465kg (3.23lb); e7D: 1.550kg (3.42lb)

c95/e95: 2.165kg (4.77lb)

c97/e97: 2.265kg (4.99lb)

c125/e125: 3.320kg (7.32lb)

c127/e127: 3.450kg (7.6lb)

Networking:

up to six displays plus sensors

Mounting options:

Surface mount. Trunnion mount with optional bracket.

Cartography:

Worldwide base map for non cartography variants.

Navionics ready-to-navigate in all other variants

(upgradable to Navionics Gold or Platinum Plus).

GPS:

Built-in 50 channels; WAAS, EGNOS and MSAS.

1 second hot start; 36 seconds upwards cold start;

Automatic signal acquisition and almanac update;

Operating frequency: 1575.42MHz; Geodetic Datum: WGS-

84, alternatives available through Raymarine displays; Ac-

tive Jamming Reduction; Ceramic Chip antenna; Accuracy:

without SBAS <15m 95% of the time. With WAAS/EGNOS

<5m 95% of the time.

Operation temp range:

-25° to 55°C (13° to 131°F)

SeaTalk^{hs} (Network) Connectivity:e7/e7D: 1x SeaTalk^{hs} port. 100Mbps/s. RayNet typec95/c97/e95/e97/c125/c127/e125/e127: 2x SeaTalk^{hs} ports.

100Mbps/s. RayNet type.

SeaTalk^{ng} Connectivity:1x SeaTalk^{ng} connection**NMEA Connectivity:**

2x NMEA 0183 ports: NMEA port 1 input and output

(4800/9600/38,400 baud). NMEA port 2 input only

(4800/9600/38,400 baud)

Wireless Connectivity:

WiFi: 802.11 b/g; Bluetooth: AVRCP 2.1+EDR power class

1.5.

Video:

All displays have x1 BNC (female) composite video input connector (PAL/NTSC formats).

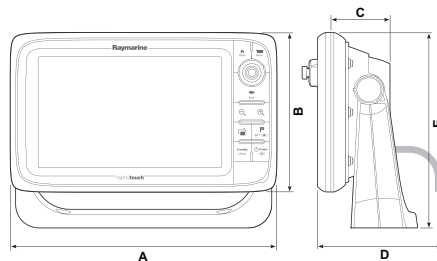
e95/e97/e125/e127 displays have a second BNC input plus x1 VGA output via accessory cable (sold separately).

Sonar:

ClearPulse with 50/83/200 kHz operating frequencies up

to 600W RMS. Sonar transducer port (c97/e97/c127/e127

versions only).

Note: All specifications are preliminary and subject to change without prior notice.

Dimensions (mm)					
	A	B	C	D	E
e7/e7D	226	145	64	160	180
c95/c97/e95/e97	290	173	64	160	212
c125/c127/e125/e127	354	222	69	160	256

Note: Specifications subject to change

NEW c and e SERIES PART NUMBERS

New c Series Multifunction Displays

E70012	c97 (9.0") MFD display with Sonar (no Charts)
T70021	c97 (9.0") MFD display with Sonar (US Coastal Charts)
T70023	c97 (9.0") MFD display with Sonar (Europe Coastal Charts)
T70025	c97 (9.0") MFD display with Sonar (Rest of World Charts)
T70027	c97 (9.0") MFD display with Sonar (US Inland Lakes and Rivers Charts)
E70014	c127 (12.1") MFD display with Sonar (no Charts)
T70031	c127 (12.1") MFD display with Sonar (US Coastal Charts)
T70033	c127 (12.1") MFD display with Sonar (Europe Coastal Charts)
T70035	c127 (12.1") MFD display with Sonar (Rest of World Charts)
T70037	c127 (12.1") MFD display with Sonar (US Inland Lakes and Rivers Charts)
E70011	c95 (9.0") MFD display (no Charts)
T70020	c95 (9.0") MFD display (USA Coastal Charts)
T70022	c95 (9.0") MFD display (Europe Coastal Charts)
T70024	c95 (9.0") MFD display (Rest of World Charts)
T70026	c95 (9.0") MFD display (USA Inland Lakes and Rivers Charts)
E70013	c125 (12.1") MFD display (no Charts)
T70030	c125 (12.1") MFD display (US Coastal Charts)
T70032	c125 (12.1") MFD display (Europe Coastal Charts)
T70034	c125 (12.1") MFD display (Rest of World Charts)
T70036	c125 (12.1") MFD display (US Inland Lakes and Rivers Charts)

New e Series Multifunction Displays

E62354	e7 7" MFD display (no Charts)
E62355	e7D 7" MFD display with sonar (no Charts)
T70000	e7 7" MFD display (US Coastal Charts)
T70001	e7 7" MFD display (Europe Charts)
T70002	e7 7" MFD display (Rest of World Charts)
T70005	e7D 7" MFD display (US Coastal Charts)
T70006	e7D 7" MFD display with sonar (Europe Charts)
T70007	e7D 7" display with sonar (Rest of World Charts)
E70021	e95 9" MFD display (no Charts)
E70022	e97 9" MFD display with sonar (no Charts)
T70040	e95 9" MFD display (US Coastal Charts)
T70041	e97 9" MFD display with sonar (US Coastal Charts)
T70042	e95 9" MFD display (Europe Charts)
T70044	e95 9" MFD display (Rest of World Charts)
T70043	e97 9" MFD display with sonar – Navionics ready-to-navigate cartography (EU)
T70045	e97 9" MFD display with sonar (Europe Charts)
E70023	e125 12.1" MFD display (no Charts)
E70024	e127 12.1" MFD display with sonar (no Charts)
T70050	e125 12.1" MFD display (US Coastal Charts)
T70051	e127 12.1" MFD display with Sonar (US Coastal Charts)
T70052	e125 12.1" MFD display (Europe Charts)
T70054	e125 12.1" MFD display (Rest of World Charts)
T70053	e127 12.1" MFD display with sonar – (Europe Charts)
T70055	e127 12.1" MFD display with sonar (Rest of World Charts)
E62351	RCU-3 Remote control

Refit/Upgrade Bezels

R70008	C90W/E90W Easy-Fit Upgrade Bezel
R70009	C120W/E120W Easy-Fit Upgrade Bezel
R70010	C80/E80 Classic Easy-Fit Upgrade Bezel
R70011	C120/E120 Classic Easy-Fit Upgrade Bezel

Note: Charts indicated in new c and e Series above part number listings is Navionics Ready-to-Navigate cartography.

i GO SAILING. i GO CRUISING. i GO FISHING! THE NEW i70 INSTRUMENT HEAD.

Whether your passion is sailing, power boating or fishing, the stylish all new i70 is for you. i70 is packed full of powerful features for yachtsmen and power boaters but remains very simple to use.

Ultra bright displays

The i70 range is bright and clear with LED backlighting and uses upto 35% less power than other colour instrument displays. The colour LCDs have 160° viewing angles and an anti-reflective window coating, so information displayed can be seen clearly in all conditions.

Customisation

i70 can be customised to suit your personal boating requirements. From traditional analogue dials to engine information and tank levels, i70 has the capabilities to show it all.

Networking

i70 seamlessly integrates with SeaTalk^{ng} and NMEA 2000 marine networks. User-selectable data sources allow integration on multi-sensor networks. i70 also provides the connection to the legacy SeaTalk network*.

Transducer compatibility

i70 is compatible with smart transducers or legacy analogue transducers using the optional ST70 pods or ITC-5, Raymarine's new SeaTalk to SeaTalk^{ng} network switch (available Spring 2012)

* via the SeaTalk to SeaTalk^{ng} adaptor cable.





All new LightHouse user interface

The LightHouse user interface is easy to use and is consistent with the new **e and c range of displays**. So once you are familiar with i70 you'll be at home with e7 too.



Comprehensive data categories

Battery; Boat; Depth; Distance; Engine; Fuel; Environment; GPS; Heading; Navigation; Pilot; Speed and Time





PHOTO: JOE MCCARTHY

WORLD FIRST
INSTRUMENT
AIS REPEATER

i70: Instrument

The screen captures (below) are examples of configurations and features available. i70 is highly customisable allowing you to display the information you want where you want it.

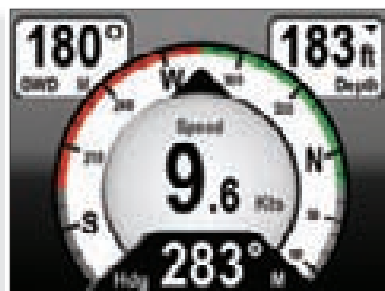
AIS Repeater mode

Repeat AIS data from NMEA 2000 AIS receivers. View the closest 25 AIS equipped vessels and select individual targets to obtain vessel information.

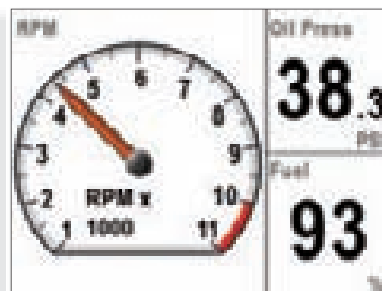
The stylish new i70 is packed full of powerful features but remains very easy and slick to use. The large 4.1" LCD screen is a model of clarity for superb visibility at distance and acute angles.



Analogue and digital engine graphic



All-in-one navigation display



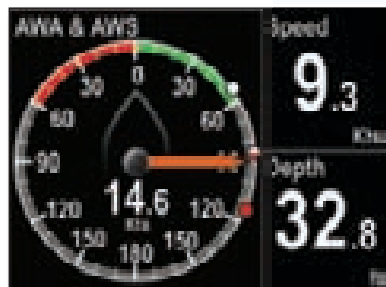
Analogue and digital engine data



Full-screen virtual analogue wind display



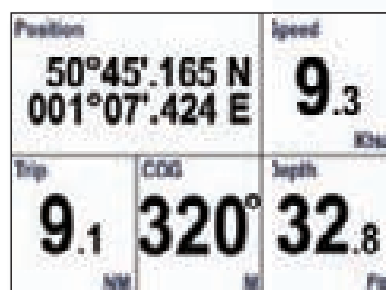
Customisable Tridata multiline display – white on blue



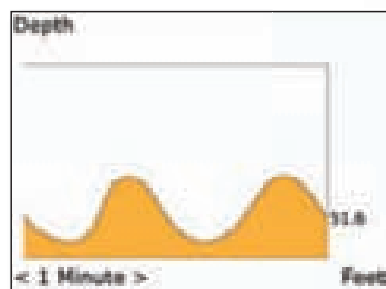
Analogue and digital data – white on black



Analogue and digital five-way split – white on black



Five-way split data screen – black on white



Graphs provide a means of showing how data has changed over time



Low-profile housing (13mm)

Slimline bezel for maximum screen size

Anti reflective coating for improved visibility

LED backlighting

Choice of 4 colour palettes

Simple four-button user interface

WORLD FIRST
INSTRUMENT
AIS REPEATER

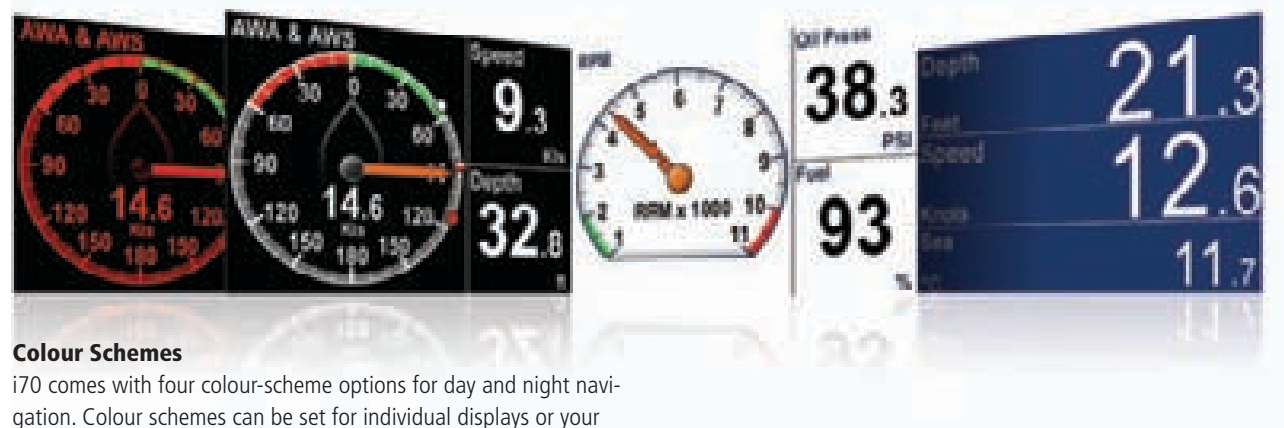


PHOTO: SESA MARINE



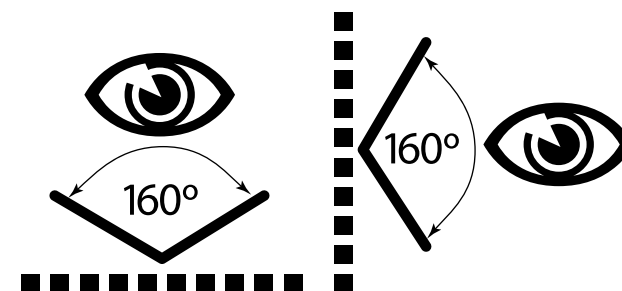
PHOTO: JOE MCCARTHY

DISPLAY WHAT YOU WANT WHERE YOU NEED IT!



Colour Schemes

i70 comes with four colour-scheme options for day and night navigation. Colour schemes can be set for individual displays or your entire i70 system.



160° viewing angles

With horizontal and vertical viewing angles of 160°, data can be seen clearly from acute positions.



Features overview

- Large 100mm (4.1") over-sized LCD display
- 320 x 240 pixels
- 160° viewing angles
- Large 43mm digits in full screen mode
- Anti-reflective coating for improved visibility in bright sunlight.
- New LightHouse user interface is simple and quick to use.
- AIS repeater
- Supported data views include: Wind, Speed, Depth, Tridata, Engine (NMEA 2000), Environmental (NMEA 2000), Fuel (NMEA 2000) and navigation
- Low power – typically 132mA/1.6W.

SPECIFICATIONS

Nominal voltage: 12v DC

Voltage range: 9 to 16v DC

Screen: 4.1" TFT LCD 320 x 240 pixels

Colours: 16 bit colour (64K colours)

LCD Brightness: 700cd/m²

Power consumption: 1.6 Watts (12v, 132ma typical)

Connections: SeaTalk^{ng} (x2) (NMEA2000 and SeaTalk compliant)

Operating temperature: -025° to 55°C (-13°F to 131°F)

Storage temperature: -030° to 70°C (-22°F to 158°F)

Relative humidity: 93% max.

Waterproofing: IPX6

Conformance: Europe 2004/108/EC. Australia and New Zealand C-Tick compliance level 2

Data Categories: Battery; Boat; Depth; Distance; Engine; Fuel; Environment; GPS; Heading; Navigation; Pilot; Speed; Time

Notes: Data displayed on i70 instruments depends on your system configuration. Therefore, some items may not be available. For a complete listing of the data available within the categories documented above, please visit our website

www.raymarine.com or download the i70 User Guide

All specifications are subject to change without prior notice.

ORDERING INFORMATION

E22172 i70 instrument

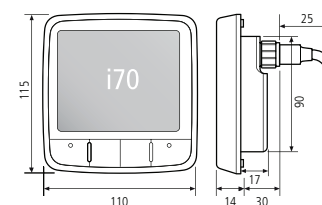




PHOTO COURTESY OF ATLANTIS



p70 Autopilot Control Head

Low power
consumptionSunlight
viewable3.5" LCD
pilot displayBright LED
backlightingDay and nighttime
colour palettesLightHouse user
interfaceSeaTalk^{ng}/NMEA2000
support

p70 AND p70R AUTOPILOT CONTROL HEADS

The new autopilot control heads are available in two control styles. The p70 is a push-button operation controller designed primarily for sailboats, while the p70R with its combination of push-buttons and rotary control dial is aimed at powered craft.

Features overview

- New LightHouse user interface is simple and quick to use.
- 160° viewing angles.
- Start up wizard helps you configure the pilot quickly and easily.
- Anti-reflective coating for improved visibility in bright sunlight.
- Button or rotary control options for sail and power applications.
- Low power – typically 132mA/1.6W.
- Supported autopilot modes: Auto; Standby; Pattern; Track; Wind Vane; Power Steer and Jog Steer.
- Displays pilot information in different formats.
- Simple system and group dimming/illumination.
- Support for multiple data sources.
- SeaTalk^{ng}/NMEA2000 and SeaTalk connectivity.

Bezel
Slimline bezel for maximum screen size

Colour Options
Multiple colour palettes for day and night time use

Screen Coating
Anti-reflective coating for improved visibility

Control
Power steer knob and buttons on p70R power head and buttons only on p70 sail head



p70R Autopilot Control Head

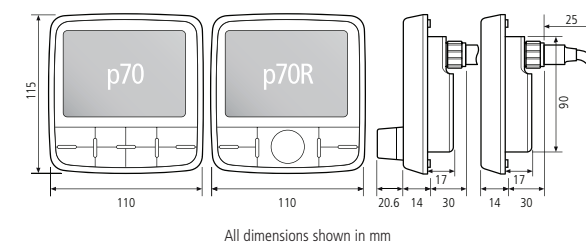
p70 AND p70R SPECIFICATIONS

Nominal voltage: 12v DC
Voltage range: 9 to 16v DC
Screen size: 3.5" TFT LCD 320 x 240 pixels
Colours: 16 bit colour (64K colours)
LCD Brightness: 700cd/m²
Power consumption: 69mA no lighting; 134mA 100% illumination
Connections: SeaTalk[®] (x2) (NMEA2000 and SeaTalk compatible)
Operating temperature: -025° to 55°C (-13°F to 131°F)
Storage temperature: -030° to 70°C (-22°F to 158°F)
Relative humidity: 93% max.
Waterproofing: IPX6
Conformance: Europe 2004/108/EC. Australia and New Zealand C-Tick compliance level 2

Note: All specifications are preliminary and subject to change without prior notice.

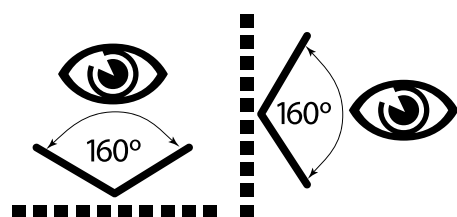
ORDERING INFORMATION

E22166 p70 Autopilot controller (button)
E22167 p70R Autopilot controller (rotary)

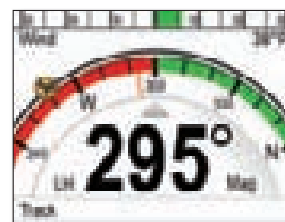


All dimensions shown in mm

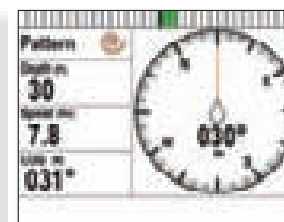
Note: Illustrated p70 and p70R displays show representations of autopilot data.



Superior viewing. Advanced LED backlighting offers low power consumption and delivers vibrant colour and contrast. Wide horizontal and vertical viewing angles ensure the display can be seen clearly from acute positions.



Graphic autopilot display



2D autopilot display



Large autopilot display



Access a wide range of fishing patterns



G SERIES GLASS BRIDGE MULTIFUNCTION NAVIGATION – POWER AND VERSATILITY AT ITS BEST

Glass Bridge is a complete multifunction navigation and entertainment solution that offers unmatched visualisation capabilities and versatility. Combine ultra bright displays, networked processing and premium sensors to create the custom solution that is right for you.

More than just navigation, Glass Bridge is a total onboard information and command system with unmatched input possibilities.

PHOTO: AZIMUT

Raymarine's premier navigation system, Glass Bridge Ultra High Performance Network features:

Performance

At the heart of every G Series Glass Bridge system is the powerful GPM400 Processor which has 10 times the processing speed of conventional marine electronics. Super-fast PC-like performance with the reliability of an embedded navigation device and multiple processor modules that can be networked together.

The GPM400 comes with entire geographic Navionics Platinum regions pre-installed on its internal hard drive enabling you to make the most of 3D cartography, aerial photo chart overlays, enhanced port services, panoramic port photos and animated tides and currents.



Networking

The super-fast 100 megabit SeaTalk^{hs} network enables plug and play integration of multiple processor modules, marine displays and navigation stations. The SeaTalk^{ng} next generation data bus is the robust CAN-based data backbone that integrates Raymarine SeaTalk^{ng} instruments and NMEA 2000 compatible engine, generator and instrument systems.

Displays

Choice of Glass Bridge and ultra bright sunlight viewable displays for high-resolution navigation data and imagery. View 3D charts, radar, sonar and video in absolute clarity; resolutions up to 1280 x 1024 (SXGA).

HD Color and Super HD Color Radar Antennas

Glass Bridge supports Raymarine's HD and Super HD Color Radar Technology. HD Color Radar's advanced Digital Signal Processing (DSP) effectively delivers the performance of a much larger, higher powered radar antenna (go to p58 - 65).



Command Centre Keyboard and Compact Keyboard

Each G Series component intelligently networks with one another. The entire system can be controlled by the easy-to-use G Series control keyboard. Wired or wireless, the G Series keyboard controls single or multiple G Series navigation stations. The wired Compact Keyboard is the ideal solution to space-limited G Series installations.



256
COLOR HD+SHD



PHOTO: JOE MCCARTHY

HD Digital Sonars

Glass Bridge utilises Raymarine's powerful HD Digital sonar technologies using the ultra high-performance DSM400 Digital Sonar Module (go to p48).

DSM400. Equipped with 4 independent sonar transceivers and up to 3kW of output power, the DSM400 sets the standard in sonar performance for the serious sport fisherman. Alternatively, lower output power is available using the DSM300 (12/24v) or the DSM30 (12v only) Digital Sonar Modules.



Camera Integration

Glass Bridge uses the GVM400 video module to enable up to 4 simultaneous video streams from any display system. Raymarine's SeaTalk^{hs} network gives simultaneous access to every onboard video source from multiple G Series navigation stations.



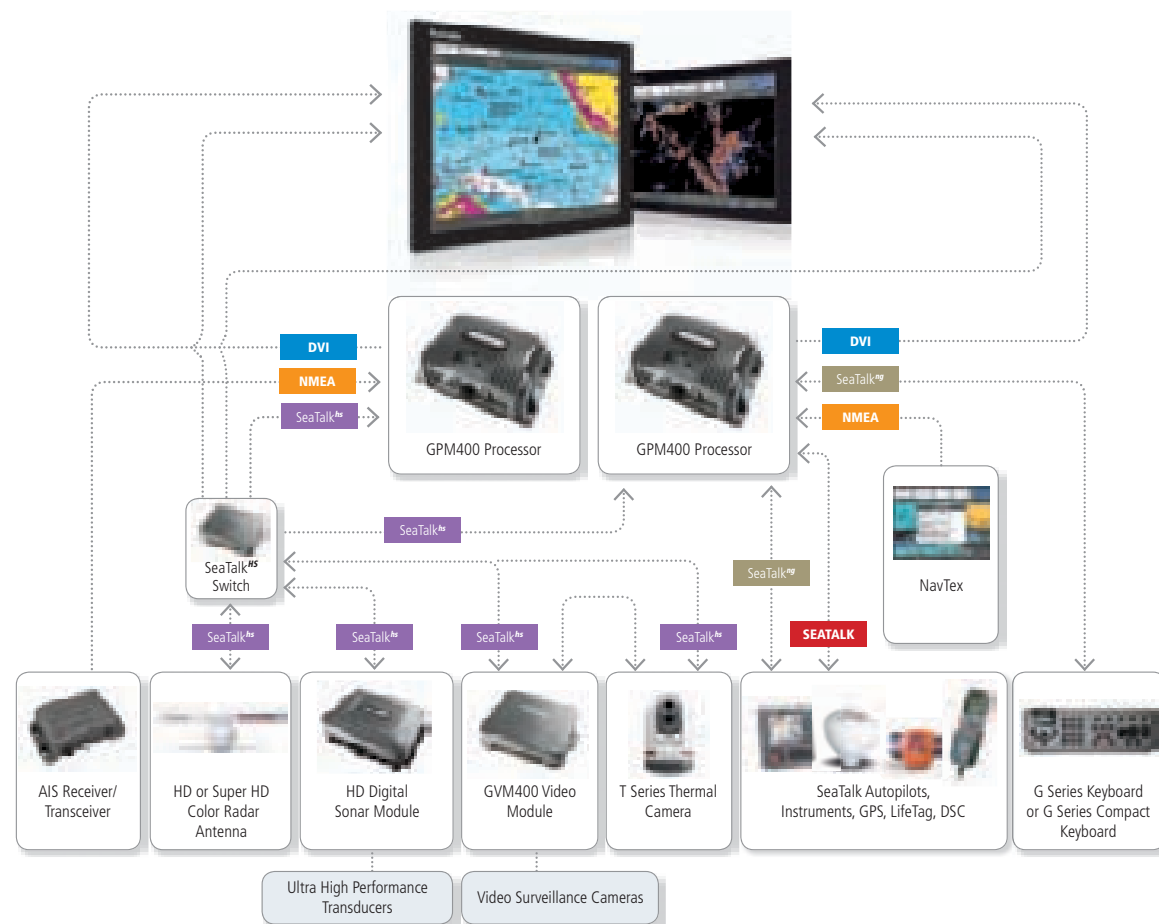
AIS Transceivers and Receivers

Glass Bridge works with AIS for enhanced situational awareness. Operating in the VHF maritime band, the AIS system enables the wireless exchange of navigation status between vessels and shore-side traffic monitoring centres. Commercial ships, ocean-going vessels and other boats equipped with AIS transmitters broadcast AIS messages that include the vessel's name, course, speed and current navigation status. (go to p68-71).

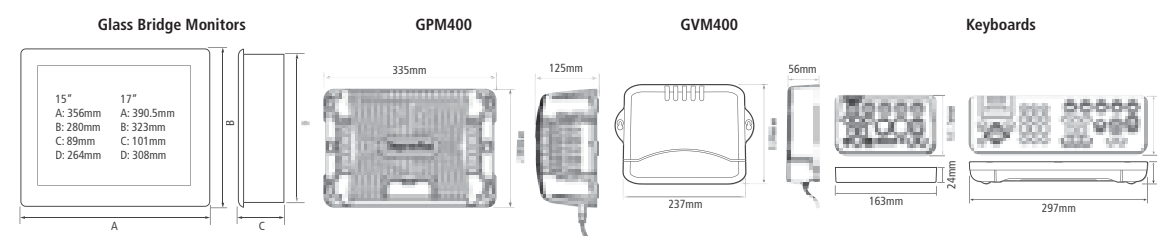


Glass Bridge system overview

This diagram gives an overview of the G Series system possibilities; the number of configurations available are almost endless. For detailed information and advice on tailoring a system to your exact requirements, please contact your nearest Raymarine stockist. To find your nearest Raymarine stockist please use the Dealer locator on www.raymarine.com



Dimensions



G SERIES GLASS BRIDGE SPECIFICATIONS

GLASS BRIDGE DISPLAYS

Power supply: 12V and 24V systems

Display sizes: 15" and 17" (12" and 19" available late Spring 2012)

Backlighting: 100 levels

Mounting method: Panel mount only

Display resolution (pixels): 1024 x 768 (15") 1280 x 1024 (17")

Inputs: 3x VGA, 2x DVI, 3x composite video and 1x S-Video

GPM400

Power supply: 12V and 24V systems

Operating voltage: 10.7 – 32V DC

Power consumption (amps): 3A at 12V, 1.5A at 24V (no external loads)

5A at 12V, 2.5A at 24V (external loads)

Weight kg (lb): 6.5 (14.3)

Connections: Data: NMEA 0183 x2, SeaTalk, SeaTalk^{ng}, SeaTalk^{hs} Compact Flash, USB (software upgrade only).

Video: DVI x2 (optional VGA adaptor available)

Audio: stereo line out (rated 1V RMS)

GVM400

Power supply: 12V and 24V systems

Power consumption (amps): 650mA at 12V, 330mA at 24V

Weight kg (lb): 0.8 (1.76)

Connections: Data: SeaTalk^{hs}, Video: inputs 1-3: composite video (PAL 626 line, NTSC 525 line). Input 4: S-Video or composite video

Audio: stereo audio line in (rated 1V RMS) associated with input 4 (S-Video or composite)

KEYBOARDS

Power supply: 12V system (from SeaTalk^{ng} bus)

Power consumption: Command Centre: 1.5W, Compact: 150mA

Connections: Command Centre: SeaTalk^{ng}, SeaTalk RF (requires wireless upgrade kit)

Compact: SeaTalk^{ng}

ORDERING INFORMATION

E62286	15" Glass Bridge Monitor
E62287	17" Glass Bridge Monitor
E02042	GPM400 Processor (US)
E02047	GPM400 Processor (Europe)
E02048	GPM400 Processor (RoW)
E02043	GVM400 Video Module
E02044	Command Centre Keyboard (wired)
E02045	Command Centre Keyboard Base Station
E02046	Command Centre Keyboard Wireless Upgrade
E62154	Compact Keyboard



PHOTO: EDDIE MAYS

WIRELESS INSTRUMENTS FOR RACING

You want the best chance of crossing the line first. You need instant access to accurate data, and displays that are absolutely reliable. TackTick wireless instruments display all the data you'll need and have user-configurable pages, crucial for racing performance and there are no wires running through your hull or down your mast.



T210 Multifunctional Wireless Maxi Display

A large, solar-powered mast display for racing yachts that provides highly visible and accurate data. Extra large 50mm (2") digits.

Unique racing functions

- **Auto page selection.** The 'Auto Leg' function allows the display to automatically show the right information for each leg of the course.
- **Page hiding.** Show only the data options required, minimising the time it takes to select the information you want.
- **Maximised performance.** The displays have an innovative Start Line feature, Line Bias, Wind Shift and Timer functions together with indicators for acceleration and speed trend.
- **In tidal waters:** Set, Drift, Turn and Course to Steer functions will give you the edge by helping you spot tides.
- **Excellent visibility.** High contrast LCD with wide viewing angle.

T215 Multifunctional Dual Wireless Maxi Display

Displays two lines of data in high contrast 32mm (1.3") digits.

Unique racing functions:

- **Excellent visibility by night.** The black background ensures minimal night vision disturbance and a choice of red or amber digits allows you to select different colours for different data.
- **Remote control.** Your Maxi can be controlled and configured from anywhere on your boat using the TackTick Remote Display.
- **Free format data pages.** Allows PC navigation and race software to write directly to TackTick displays.



T060 Micro Compass

Micro Compass gives you a massive racing advantage. It is light, easy to read, reliable and precise. The Micro Compass's tactical scale gives you clear stable figures for port and starboard tacks. Simple twin display for easy wind shift alert. Great aid to training.



T075 Racemaster System
and Triducer

T070 Race Master

The ultimate tactical race compass and wind shift indicator. Its two-tier display shows your heading, how far you're above or below the mean course, and how much you're being headed or lifted. It will enable you to quickly and easily establish the favoured end of the start line, and will help you sail the shortest distance to the windward mark. Downwind, you can see how far off dead downwind you are and when you should gybe for optimal VMG.



T113 Multifunctional Wireless Remote Display

Not just a remote control, more an essential item of equipment for those serious about winning.

The Remote Display controls, configures and repeats all the data you need to improve performance, including wind trends, speed trends, VMG to wind and waypoint, SOG and COG, and performance graphing.

Wireless Entry Level Systems

Whether you're replacing an existing system or considering installing one for the first time, Entry Level systems are easy to set up, and in most cases, perfectly usable with your existing Airmar transducers. Simply fit the displays where you want, run a 12 volt power supply to the display and 12 volts to the transducer, there's no need to connect the display to the transducer; the data will then transmit wirelessly around the boat. All displays are fully compatible with any of the TackTick Micronet systems.



T030 Speed and Depth display



T033 Wind Display System with
wind transducer



T034 Depth Display System with
transducer and pod



T035 Speed Display System with
transducer and pod



T036 Retro Fit System – speed or
depth display with pod



T037 Speed and Depth Displays
with transducer and pod



T038 Speed, Depth and Wind
Displays with transducers and pod



PHOTO: JOE MCCARTHY



PHOTOGRAPHY COURTESY JEANNEAU

**T120 Wireless Wind Transmitter**

This robust, accurate, and highly responsive wireless Wind Transmitter sends data from the top of your mast wirelessly to the TackTick display; it is also completely solar powered.

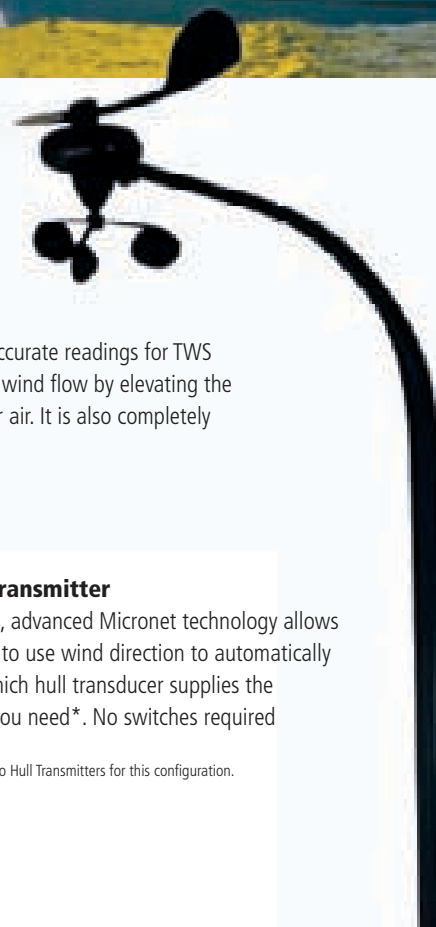
T220 Vertical Wind Transmitter

A unique wind wand that provides highly accurate readings for TWS and TWA by reducing errors from disturbed wind flow by elevating the wind sensor 1.35 m (approx 4') into cleaner air. It is also completely wireless and solar powered.

**T121 Hull Transmitter**

For multihulls, advanced Micronet technology allows your displays to use wind direction to automatically determine which hull transducer supplies the information you need*. No switches required

*Note: you need two Hull Transmitters for this configuration.

**T910 Transducer**

Triducer with speed, depth and temperature in one. Retractable. 50m reading range. 6m cable length.

**T911 Transducer**

Speed and temperature transducer. Retractable with flap valve. 6m cable length.

**T912 Transducer**

Depth transducer. Retractable. 80m reading range. 6m cable length.



TACKTICK WIRELESS INSTRUMENTS FOR CRUISING

TackTick systems are designed to be completely flexible; simple to install (it takes roughly an hour to install a Wind Transmitter, Hull Transmitter and all your displays) with no cable holes to drill in your bulkhead or wires to thread down your mast.



T110 Multifunctional Wireless Display.

A large 38mm (1.5") readout shows any single type of data available on the system. It is simple to configure and easy to read. Multiple screens (shown here with backlit screen).



T111 Multifunctional Wireless Dual Display.

Shows two lines of data simultaneously and can be configured at any time to display information provided by your transmitters. 20mm (0.8") digital readout. Multiple screens.



T112 Multifunctional Wireless Analogue Display.

A unique, multi-use instrument for displaying wind and course, combining clear analogue and digital formats. The display shows 14mm (0.56") digits. Multiple screens.



T100 Wireless Speed and Depth System (T111, 121, 911 and 912)



T101 Wireless Multi Wind System (T112 and 120)



T103 Wireless Speed and Depth System with Triducer (T111, 121 and 910)



T104 Wireless Speed, Depth, Wind and NMEA System (T111, T112, T120, T121, T122, T911 and T912)



T106 Wireless Remote Starter System (T113 and 122)



T108 Wireless Speed, Depth and Wind System (T111, 112, 121, 910 and 120)



T163 Wireless Power Boat System with Transom Triducer (T111, 121 and 915)



T122 Wireless NMEA Interface Box – 2 inputs, 1 output.

TACKTICK SPECIFICATIONS

GENERIC FEATURES

Power: Solar powered (300 hours autonomy)

Waterproof: submersible to 10m (32.8ft)

Weights: Micronet Maxi and Dual Maxi 360g (0.79lb); Micronet 360g (0.79lb); Micronet Remote 135g (0.29lb); Micro Compass 150g (0.33lb); Master Series 445g (0.98lb)

SPECIFIC FEATURES

Micronet Maxi and Dual Maxi: Single LCD; 3 backlighting levels plus choice of orange or red lighting; Compatible with instrument systems via NMEA.

Micronet: 3 backlighting levels; Compatible with instrument systems via NMEA.

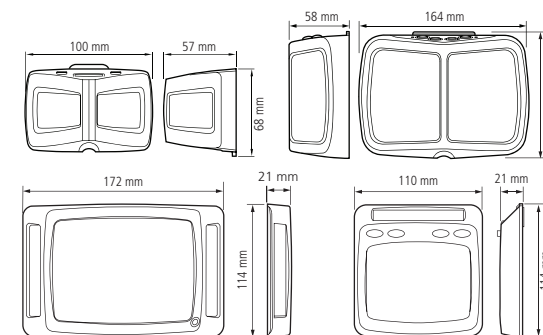
Micronet Remote: Single multi-line LCD; Compatible with instrument systems via NMEA.

Micro Compass: Dual LCD.

Master Series: Dual LCD with 3 backlighting levels.

ORDERING INFORMATION

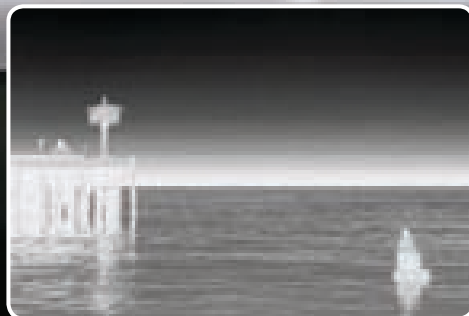
- T210** T210 Micronet Maxi Display
- T215** T215 Micronet Dual Maxi Display
- T113-868** Micronet Remote Control
- T070-868** Micronet Race Master
- T060** Micro Compass
- T110-868** T110 Micronet Multi Digital Display
- T111-868** T111 Micronet Multi Dual Digital Display
- T112-868** T112 Micronet Multi Analogue Display



For more product specification information, visit our website www.raymarine.com

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HOW THERMAL NIGHT VISION CAMERAS HELP KEEP YOU SAFE

Turn Night into Day

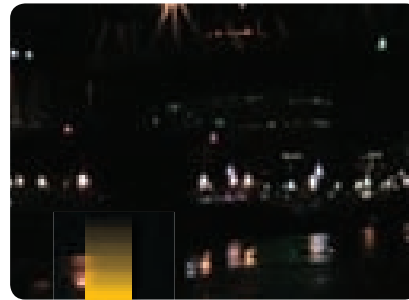
- ☑ Safer navigation
- ☑ Life-saving potential in man-overboard situations
- ☑ Enhanced visibility and situational awareness at night
- ☑ Easy docking in low light
- ☑ Iceberg detection and avoidance
- ☑ Boat security and surveillance

Navigation and Collision Avoidance. Thermal night vision cameras make navigation safer with clear video that helps you to see hazards like buoys, floating debris, rocks, land, bridges, and other vessels night and day.

Man Overboard. Thermal night vision cameras can help you to find a person in the water faster than any other night vision technology. Thermal cameras are used by Coast Guards, Police Agencies, Search and Rescue teams and Militaries around the world.

Easy to Use. Thermal night vision cameras from Raymarine are easy to use, and require no training. The images you get from thermal night vision cameras are intuitive and instantly easy to understand. If you can watch TV, you can use a Raymarine thermal night vision camera.

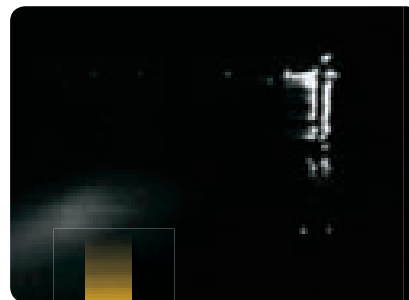
Complements other On-board Electronics. Raymarine's thermal night vision cameras complete your electronics suite: GPS and chart plotters tell you where you are and where you going; radars alert you to nearby vessels; but nothing lets you see what's out there like a Raymarine thermal night vision camera.



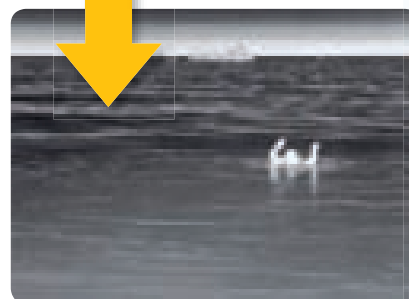
YOUR VISION



RAYMARINE VISION



YOUR VISION



RAYMARINE VISION



IMAGERY FOR ILLUSTRATIVE PURPOSES ONLY

RANGE PERFORMANCE

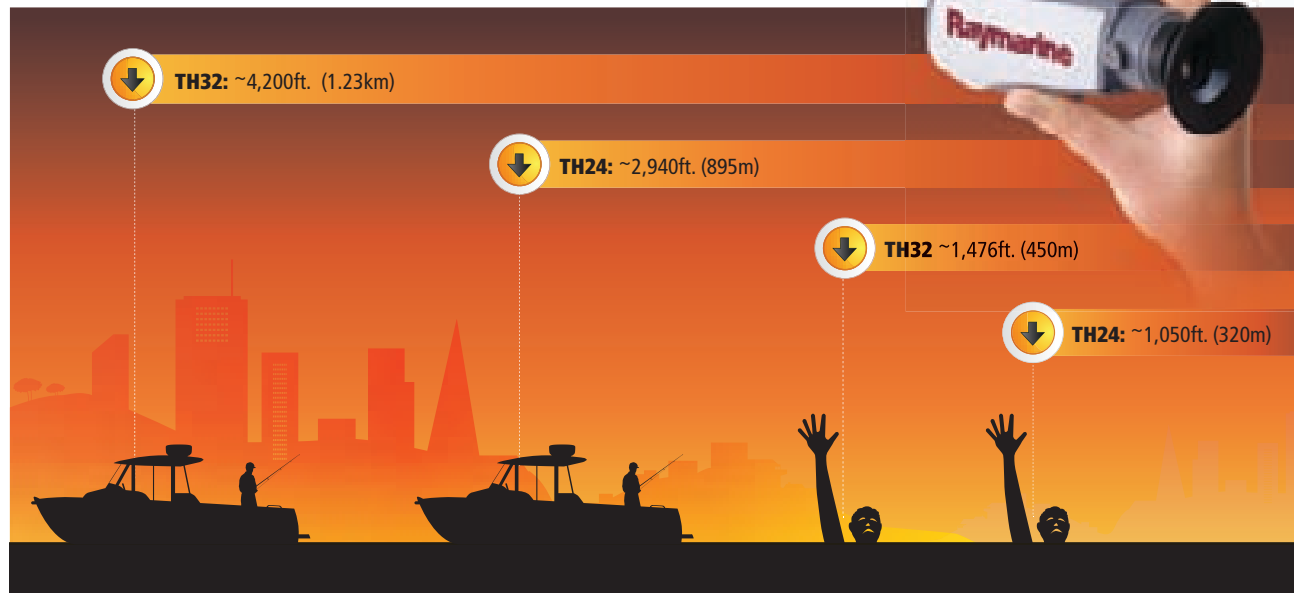
Range and detection

Raymarine thermal night vision cameras create pictures by detecting and displaying small changes in heat, not light.

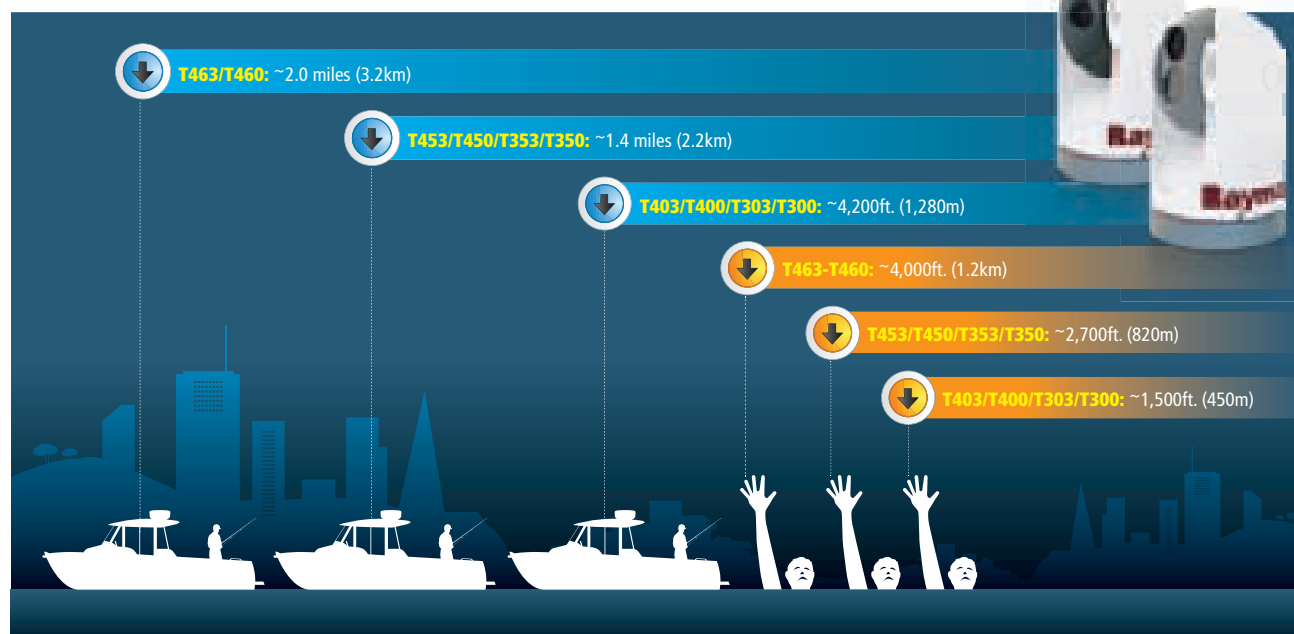
Even the heat left on a wall by a person's hand has enough thermal energy to show up clearly on a Raymarine thermal night vision camera.

Everything generates thermal energy, even ice! Although this energy is invisible to the naked eye, Raymarine thermal night vision cameras detect it and turn it into video that is easy to understand, allowing you to see more and see further than you could with your eyes.

The range at which Raymarine thermal night vision cameras detect objects is shown in the graphics (right). However, actual object detection range performance may vary depending on camera set-up, environmental conditions, user experience and the type of display used.



Handheld TH Series Thermal Cameras



Fixed-mount remote controlled T Series Thermal Cameras



HANDHELD THERMAL NIGHT VISION CAMERAS

The new Raymarine TH Series Thermal Cameras gives boaters the power to see clearly in total darkness. Both models use the same proven FLIR thermal imaging technology as Raymarine's premium T Series fixed mount thermal night vision systems, but in a compact, handheld easily accessible format.

TH Series Thermal Cameras make pictures from heat, not light, helping you see landmarks, obstructions, and other vessels clearly in all light conditions from direct sunlight to complete darkness. Thermal night vision improves your ability to see rocks, buoys, floating debris, and even helps you find people in the water, vital when just a few minutes makes all the difference in the matter of survival.

TH24 AND TH32 SPECIFICATIONS

Detector type: TH24: 240 x 180 V0x Microbolometer TH32: 320 x 240 V0x Microbolometer
Focal length: 19mm
Field of view (H x W): 24° x 18°
Waveband: .5 to 13.5 µm
Freeze frame: TH24 only
Digital E-Zoom: TH32 only (2×)
Focus: automatic
Diopter adjustment: +2
USB port: for software updates/upgrades
Task light: LED
Audible alert: Indicates camera on/function change
Built-in viewfinder display: colour VGA LCD display
Polarity/detection palettes: white hot; black hot; marine red
Video refresh rate: 9 Hz
Weight: 340g
Size (L x W x H): 172mm x 58.7mm x 62mm
Fixed use: standard tripod mount
Battery type: internal camera battery/Li-Ion
Battery recharging: USB cable for internal battery charging – charging cradle optional
Environmental: rating IP-67
Operating temperature: -20°C to 50°C (-4°F to 122°F)

ORDERING INFORMATION

E70032 TH24 Handheld Thermal Marine Scope
E70033 TH32 Handheld Thermal Marine Scope

	TH24	TH32
Simple three-button operation	•	•
Rugged all-weather design	•	•
Ultra-compact and lightweight (336g) construction	•	•
Long-life rechargeable Li-Ion battery	•	•
LED Task light	•	•
Resolution (pixels)	240 x 180 pixels	320 x 240 pixels
24° x 18° Field of view	•	•
2× digital zoom		•
Freeze frame	•	
IP-67 rated	•	•



IMAGERY FOR ILLUSTRATIVE PURPOSES ONLY

T SERIES THERMAL CAMERAS

Thermal night vision cameras make navigation safer with clear video that helps you to see hazards like buoys, floating debris, rocks, land, bridges, and other vessels night and day. Thermal night vision cameras from Raymarine are easy to use, and require no training. The images speak for themselves.

Raymarine's T Series thermal night vision camera systems use cutting-edge Ethernet connectivity for easy installation, control, and interface with other on-board electronics. The rugged, waterproof gimbal enclosure provides a continuous 360° pan and $\pm 90^\circ$ tilt for an all round view.

Standard Features

- Short to medium range
- Full 360° pan and $\pm 90^\circ$ tilt capability
- Integrated multifunction display control
- Thermal only or Thermal / lowlight multi sensor configurations - see comparison table P38
- Standard and high-resolution thermal night vision camera options
- Network ready
- Rugged, fully marinized construction to withstand harsh conditions
- Window de-ice heaters for clear vision even in ice and snow
- Proprietary, patent-pending image enhancement algorithms; Digital Detail Enhancement (DDE) to bring out faint image details that you might otherwise miss
- Standard NTSC video outputs that can be viewed on any monitor with an auxiliary video input
- Pre-set gain adjustments for optimal image quality in various conditions
- On-screen icons show what the camera's doing and where it's pointing



Black hot mode



White hot mode



Low-light video

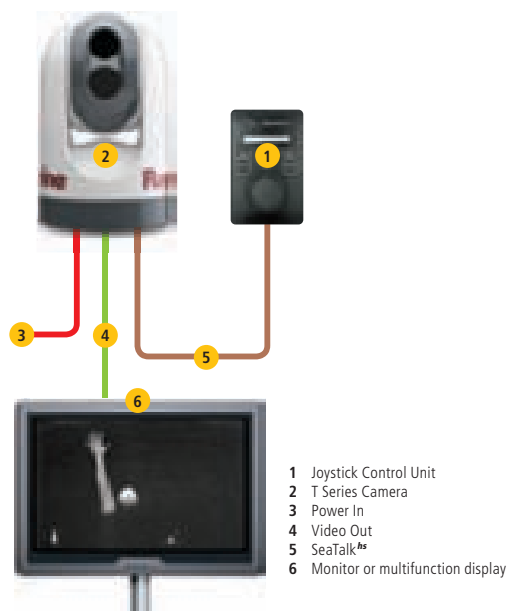


Red hot Fusion Rainbow

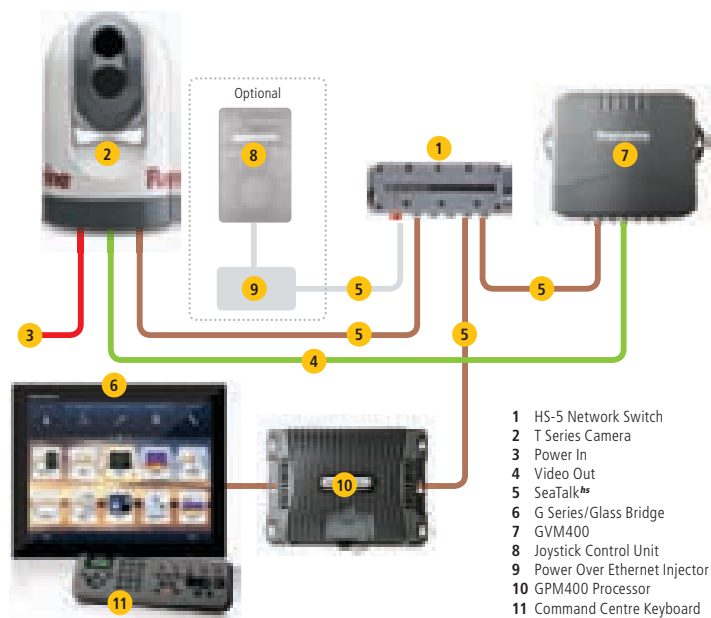




PHOTO: GALEON



**VIDEO MONITOR, C SERIES WIDESCREEN OR
E SERIES CLASSIC (VIA COMPOSITE VIDEO INPUT)**



G SERIES/GLASS BRIDGE



RAYMARINE HYBRIDTOUCH

IMAGERY FOR ILLUSTRATIVE PURPOSES ONLY

T SERIES FEATURES COMPARISON CHART

	T300 SERIES – SINGLE THERMAL CAMERA				T400 SERIES – DUAL CAMERA THERMAL AND LOW LIGHT					
	T300	T303	T350	T353	T400	T403	T450	T453	T460	T463
Thermal video	●	●	●	●	●	●	●	●	●	●
Low light video					●	●	●	●	Wattec LLTV	Wattec LLTV
Video resolution	320 x 240	320 x 240	640 x 480	640 x 480	320 x 240	320 x 240	640 x 480	640 x 480	640 x 480	640 x 480
Frame refresh rates	9Hz	30Hz	9Hz	30Hz	9Hz	30Hz	9Hz	30Hz	9Hz	30Hz
Pause, rear view, surveillance mode	●		●	●	●	●	●	●	●	●
Field of view	24°	24°	25°	25°	24°	24°	25°	25°	12°	12°
Digital zoom	2×	2×	2×	2×	2×	2×	2×	2×	2×	2×
Focal length	19mm	19mm	25mm	25mm	19mm	19mm	25mm	25mm	50mm	50mm
Part Number	E32125	E32145	E32126	E70054	E32127	E32128	E32129	E70055	E70056	E70057

Please be aware that all Raymarine thermal cameras are subject to export regulations. For more information, please contact your Raymarine dealer.

CAMERA CONTROL VIA HYBRIDTOUCH DISPLAYS AND G SERIES KEYPADS

The T Series thermal night vision cameras are designed to seamlessly integrate with Raymarine HybridTouch displays and Glass Bridge Command Centre navigation systems (MFD's). Using SeaTalk^{hs} networking, the camera's pan, tilt and zoom controls can be actuated by touch screen or using the MFD's keypad and rotary controls (HybridTouch or Glass Bridge.) A convenient thermal camera application is available right from the MFD's home screen. The application can be displayed full-screen, or in a window alongside other navigation data such as electronic charts or radar.

Best of all, the camera system's controls are available at any HybridTouch or Glass Bridge display on the boat, giving skippers the ability to navigate with thermal imagery from the main helm or a remote navigation station. The T Series thermal cameras pan, tilt and zoom controls are also compatible with the HybridTouch user interface. Boaters can enjoy the convenience of touch screen, panning and tilting the camera effortlessly with a simple touch of the display. Thanks to HybridTouch technology boaters can also control the camera with the button keys when seas are rough.

IMAGERY FOR ILLUSTRATIVE PURPOSES ONLY





RAYMARINE T SERIES JOYSTICK CONTROL UNIT

The ergonomic controller provides ready access to all critical system functions and smooth, effortless control, even in rough seas.

- **Heated LCD Screen.** Provides instant display of system status.
- **User-programmable "hot key".** Gives operators instant access to frequently-used functions.
- **Home.** A programmable feature that lets users define a Home position as a reference they can use when navigating for long periods.
- **Colour.** Different display settings let the operator choose between two black and white or three colour display schemes that are easy on the eyes and help operators see better.
- **Scene.** Provides a variety of pre-set gain and level adjustments so that operators can get the best image quality possible throughout a wide range of conditions.
- **Joystick.** The sealed 8-way control knob provides precise control even in rough seas.
- **Ethernet connectivity.** Install multiple control stations around your vessel so you can control the T Series thermal night vision cameras from anywhere you want on board.



T SERIES SPECIFICATIONS

T400 Series Daylight Imaging

Detector type: 1/2" Interline Transfer Low Light CCD

Lines of resolution: 768 (H) x 494 (V)

Maximum illumination: 100µlx (@ f/1.4)

Field of view: Matched to IR

System

Power consumption: 25W nominal; 50W maximum

Power requirements: 12 VDC to 24 VDC (-10% / +30%)

Connector types: F Type Connector with F to BNC adaptor included for video out

Video output: NTSC

Pan/tilt coverage: 360° continuous pan, ± 90° tilt

Weight: ~ 4.08kg (9lb)

Size: 177.8mm (dia.) x 284.48mm (ht.)

Environmental

Operating temperature range: -25°C to +55°C

Storage temperature range: -40°C to +85°C

Automatic window defrost: Yes

Sand/dust: MIL-STD-810E

Water ingress: IPX6

Shock: 15 g vertical, 9 g horizontal

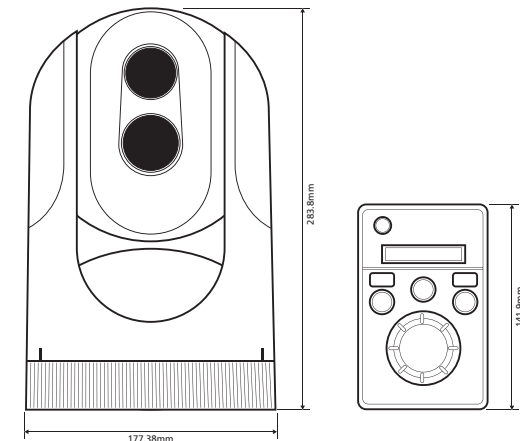
Vibration: IEC 60945; MIL-STD-810E

Lightning protection: Yes

Salt mist: IEC60945

Wind: 100 kts (115.2 mph)

EMi: IEC 60945



All specifications are subject to change without notice. Visit www.raymarine.com for the most up-to-date specifications. Actual object detection range performance may vary depending on camera set-up, environmental conditions, user experience, and type of display use.



MARINE VIDEO CAMERAS

CAM100

The CAM100 is a day and night camera that transforms Raymarine multifunctional displays with video input compatibility into powerful onboard video observation systems, recommended for exterior applications. Improve docking safety by monitoring blind spots or keep track of the crew and an eye on the engine room from the helm. From the flybridge to saloon, monitor any activity, or use multiple cameras for a total view of your vessels surroundings. The camera uses a highly sensitive IR sensor to switch from true colour to black and white night vision mode.

Reverse Image Cameras

Choose the CAM100 with Reverse Image for aft deck or engine room applications.



Features:

- Plug and play with Raymarine multifunctional displays with video input compatibility.
- Automatic switching between true colour (daytime) and black and white (nighttime).
- Automatic IR LED on/off with photo sensor.
- Excellent colour reproduction.
- Up to 15m (49') total darkness visibility in nighttime mode (black and white).
- Clear-focus at night with anti distortion technology.
- 14 Infrared LEDs.



PHOTO COURTESY OF AZIMUT YACHTS

**CAM50**

The ideal camera for interior installations. Unobtrusive dome is ideal for mounting in the saloon, wheel house or engine room.

Features:

- Available in normal view or CAM50 reverse image version.
- Plug and play with selected Raymarine multifunctional displays (see table below).
- Ceiling or wall mount with adjustable field of view.
- High quality imager and excellent colour reproduction.

BASIC CAMERA COMPARISON

	CAM50	CAM100
Designed for interior use	•	•
For exterior use		•
Raymarine multifunctional displays with video input capability	•	•
Infrared sensor		•
Image (pixels)	500 x 582	752 x 582

SPECIFICATIONS

Operating voltage: 12V DC (+30% -10%)

Power consumption: CAM100: 130mA day, 280mA night IR on at 12V DC; CAM50: 80mA at 12V DC

Weight kg (lbs): CAM50: 0.28 (0.63) CAM100: 0.31 (0.68)

Connections: Power: 12V tinned leads; Video: male BNC

Image: CAM100: PAL 752 x 582 pixels; CAM50: PAL 500 x 582 pixels

Horizontal resolution: CAM100: 550TVL CAM50: 380TVL

Format / scanning system: PAL 625 lines, NTSC 525 lines 2:1 interlaced

Video output: Composite 75ohms

ORDERING INFORMATION

E03007 CAM100 (NTSC) camera for USA and Canada

E03006 CAM100 (PAL) camera for Europe and RoW

E03021 CAM100 (NTSC) reverse image

E03020 CAM100 (PAL) reverse image

E03016 CAM50 (NTSC) camera for Europe and RoW

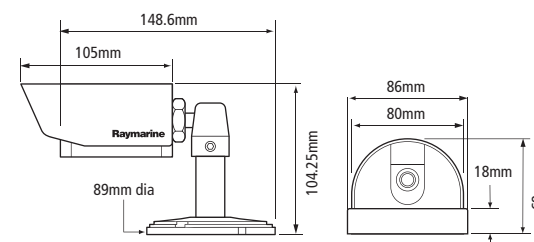
E03017 CAM50 (PAL) camera for Europe and RoW

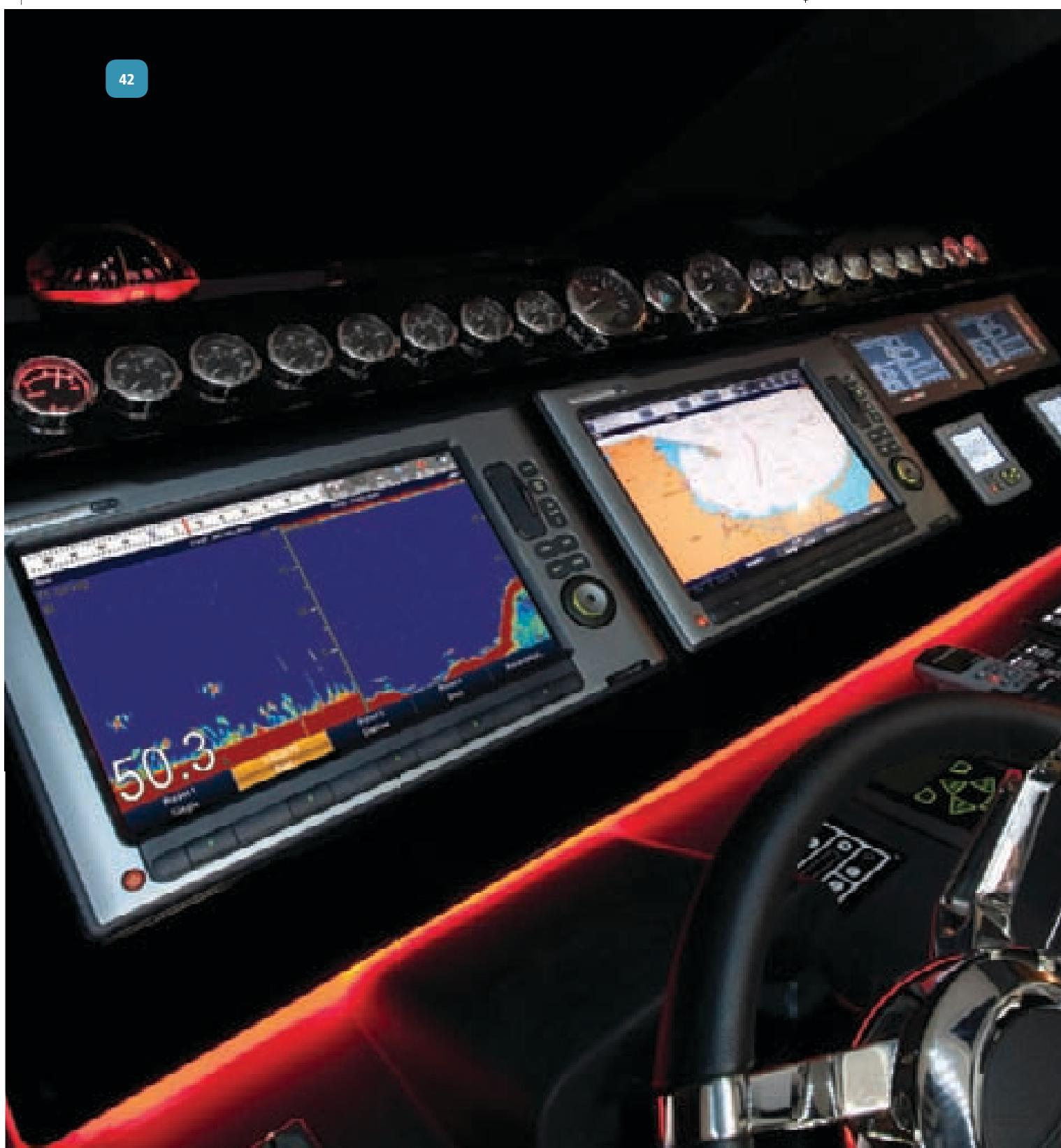
E03018 CAM50 (NTSC) reverse image

E03019 CAM50 (PAL) reverse image

E06017 Camera extension cable (5m)

E06018 Camera extension cable (15m)





E SERIES HYBRIDTOUCH™

The best of both worlds!

E Series HybridTouch displays offer traditional hard key operation or quick and slick touch-screen functionality.

Scrolling, panning, function selection and every-day navigation essentials are literally at your finger tips. Use the touch screen for quickness and ease in calm conditions or revert to hard keys when the rain starts pouring and the going gets rough.

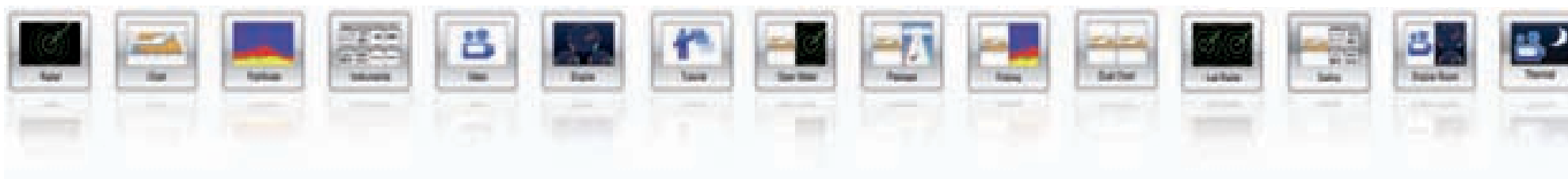
Key Features...

- **HybridTouch™ Touch screen and keypad controls**
Provide easy and flexible control in all weather conditions.
- **High bright display** provides superior visibility
- **Home screen:** Simple application selection and page customisation.
- **Refined interface** with easy to learn functions, visually dynamic graphics and intuitive menus.
- **Ready to navigate** with Navionics cartography pre-installed.
- **Anti-collision alarm.**
- **Customisable alerts** for shallow water and charted hazards.
- **Built in tutorial** gives instant access to quick reference and training materials.
- **Touch Lock** ensures no false touches in extreme conditions.
- **Bold and friendly icons** make learning and exploring easy.
- **Home screen can be personalised** with your favourite applications and screen combinations.

- **Up to 4 video inputs and 1 output** with optional accessory cable.
- **Supports high speed radar scanning** – automatically engages for optimum tracking of high speed targets at close range.
- **Supports bird mode using HD Radome or SHD Open Array (not HD Array)** – helps find more fish by detecting and tracking sea birds.
- **Thermal Imaging.** E Series Widescreen is compatible with Raymarine thermal imaging cameras that allow you to 'see at night'.
- **Save and retrieve settings.**
- **Display Animated Tides and Currents.**
- **Display AIS, AtoNs and land/base stations.**
- **Store up to 10,000 track points.**
- **Display large waypoint icons** in the selection menu.
- **Display S-Video outputs.**



Applications: Icon driven home screen makes application selection a breeze.





Cartography and Navigation

E Series HybridTouch comes with Navionics ready-to-navigate cartography pre-installed. Upgrade to Navionics Gold or Platinum+ chart cards for the latest charting including 3D, aerial photo overlays and detailed port information.

The combination of touch screen and great cartography takes ease of navigation to a whole new level;

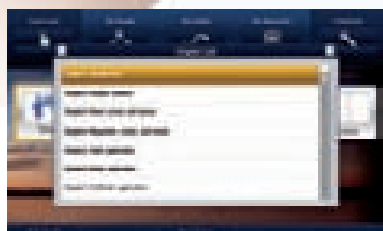
- Seamless 2D to 3D chart transitions
- Smooth panning and zooming
- Rotation and Pitch
- Top-down photo overlay
- Real time overlay of navigation data on 3D profiles
- Depth and elevation shadowing
- Quick and easy waypoint naming
- Simple touch-by-touch manual route building

Navionics Cartography

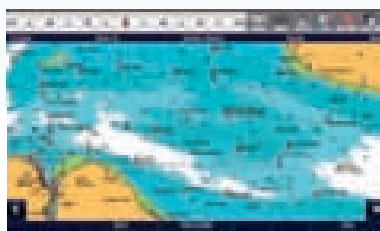
- Compatible with Navionics Gold and Platinum+ charts
- TurboView chart engine



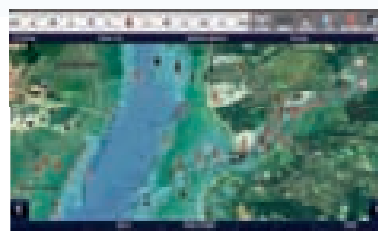
Menu bar: easy access to common functions.



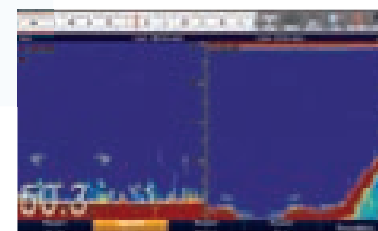
Tutorials. E Series Widescreen comes with tutorials built-in.



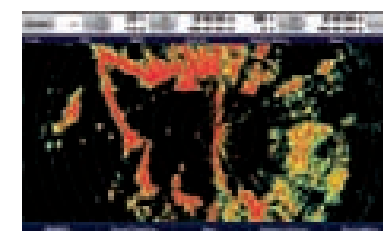
Built in cartography. E Series Widescreen comes with Navionics ready-to-navigate cartography pre-installed.



Cartography upgrades. Upgrade to Navionics Gold, Platinum or Platinum Plus for more detail and features.



Fishfinder. View HD Digital fishfinder data full screen or split with dual frequency windows.



HD Color radar. View HD or Super HD Color radar images.

Multi display networking

SeaTalk^{hs}

In its base network configuration, it's possible to create a SeaTalk^{hs} network with up to 5 E Series HybridTouch displays. For larger systems, the network can be expanded to 8 nodes by using 5 E Series HybridTouch displays and 3 SeaTalk network sensors, e.g. Sonar and radar antennas.

SeaTalk^{ng}

The SeaTalk^{ng} network enables simple interconnection of multiple i70 or ST70+ instruments, transducers and NMEA 2000 compatible devices.

SeaTalk^{hs} network sensors compatible with E Series Widescreen displays include:

- HD and Super HD Color open array radar antennas (P58-65).
- Digital and HD Color Radome radar antennas (P58-65).
- HD Digital sonar modules (P52-57).

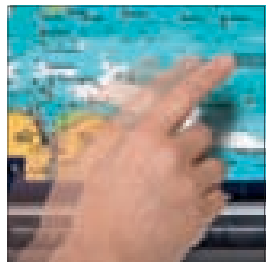


Chart panning

Panning across charts is so simple with E Series HybridTouch – touch the screen and then drag the chart in the direction you want to go.



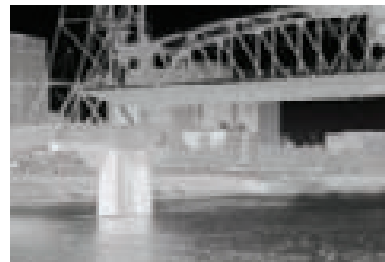
Hard keys

Hard keys provide full operation control in rough seas.



Soft key operation

Intuitive soft key menus provide easy access to essential navigation functions.



Thermal Imaging

E Series Widescreen is compatible with Raymarine thermal imaging cameras that allow you to 'see at night'.

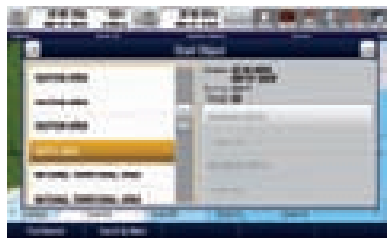
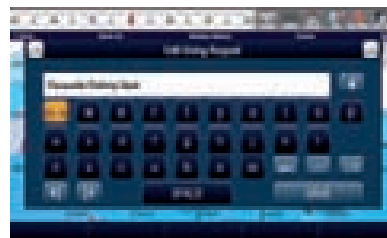
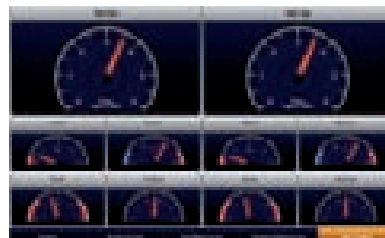


Chart and navigation information. View chart object and navigation data in a touch.



Touch screen keypad. Easily edit waypoint and route data using the touch screen keypad.



Engine data. View engine information, such as rpm, oil, fuel and boost.

E SERIES WIDESCREEN SPECIFICATIONS

Nominal voltage: 12V and 24V DC systems

Absolute voltage range: 10.7 – 32V DC

Power consumption: E90W: 23W; E120W: 35W; E140W: 37W (at full brightness)

Weight inc. optional bracket kg (lbs): E90W: 3.85 (8.5); E120W: 4.76 (10.5); E140W: 5.58 (12.3)

Display type: Colour LCD touchscreen

Display resolution: E90W: 800 x 480 pixels (VGA); E120W / E140W: 1280 x 800 pixels (XGA)

LCD Display size: E90W: 229mm (9"); E120W: 307mm (12.1"); E140W: 358mm (14.1")

Display lighting: E90W: CCFL /800 Nits; E120W/E140W: CCFL /1000 Nits

Connections: SeaTalk^{hs} (x1); SeaTalk (x1); SeaTalk^{ng} / NMEA 2000 (x1); Composite video input (PAL/NTSC) (x4) – optional cable required for 3x; Video (VGA) output (x1) – optional cable required; NMEA 0183 input (x3); NMEA 0183 output (x2); Alarm output (x1); Alarm line output – optional cable required

ORDERING INFORMATION

E62220-EU E90W multifunction display (European version)

E62220-RW E90W multifunction display (Rest of World version)

E62220-US E90W multifunction display (US version)

E62223-EU E120W multifunction display (European version)

E62223-RW E120W multifunction display (Rest of World version)

E62223-US E120W multifunction display (US version)

E62226-EU E140W multifunction display (European version)

E62226-RW E140W multifunction display (Rest of World version)

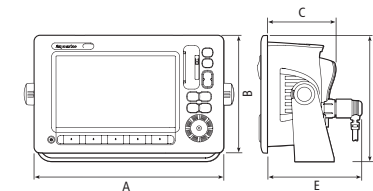
E62226-US E140W multifunction display (US version)

A62132 E90W trunnion mount kit

A62133 E120W trunnion mount kit

A62134 E140W trunnion mount kit

A62158 E Series video I/O cable



Dimensions (mm)					
	A	B	C	D	E
E90W	317	197	113	211	156
E120W	380	245	113	260	156
E140W	424	277	113	291	156



PHOTOS COURTESY OF JOE MCCARTHY



PHOTOS COURTESY OF RIVA

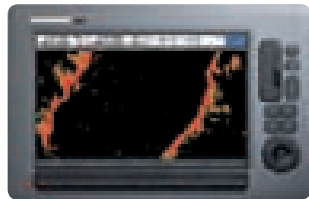


C SERIES WIDESCREEN KEY-CONTROL MULTIFUNCTION DISPLAYS

Take control with a commanding view of multiple sources of information with C Series Widescreen. Choose full screen navigation or multiple widescreen window combinations of chart, radar, sonar, video – C Series Widescreen gives you the flexibility and luxury of screen space to create the ideal configuration for every navigation scenario.

Display Sizes

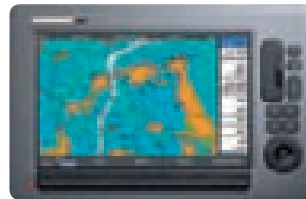
C Series Widescreen LCD displays are available in 9" (C90W), 12" (C120W) or 14" (C140W) screen sizes.



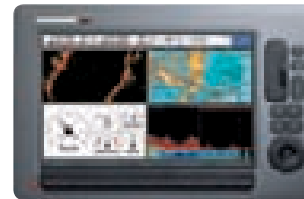
Full screen radar



Full screen sonar



Full screen chartplotter



User customisable split screens

Features

- Command view of multiple navigation sources on single display.
- Sunlight Viewable screen with Optical Bonding technology for improved viewing angle, colour and contrast in all lighting conditions.
- Internal high sensitivity GPS sensor.
- Preloaded with Navionics cartography.
- 3D and Satellite photo maps using optional Navionics Platinum charts.
- Intuitive UniControl™ pad streamlines activities and menu navigation.
- Dual display SeaTalk^{hs} networking.
- Composite video input for on board cameras or entertainment.
- Super high resolution: C90W WVGA resolution 800 x 480 pixels. C120W WXGA resolution 1280 x 800 pixels. C140W WXGA resolution 1280 x 800 pixels.
- Digital, HD Color and Super HD Color support.
- Dual range radar when used with HD or Super HD Color antennas.
- Connect to HD Digital Sonar Modules for digital fishfinding.
- SeaTalk, SeaTalk^{ng}, NMEA 2000 and NMEA 0183 connectivity.
- Advanced SPX autopilot integration – activate the autopilot directly from the chartplotter.
- AIS target tracking in both chart and radar modes.

Build your C Series Widescreen system

Build a system with single widescreen display or plug two C Series Widescreen displays together to create a dual display C Series Widescreen network – expand the system with SeaTalk^{hs} digital network sensors for radar and sonar.

C SERIES WIDESCREEN SPECIFICATIONS

Nominal voltage: 12V and 24V DC systems

Absolute voltage range: 10.7 – 32V DC

Power consumption: C90:19W; C120:22W and C140:32W (at full brightness)

Weight inc. bracket kg (lbs): C90: 3.85 (8.5); C120: 4.76 (10.5); C140: 5.58 (12.3)

Display type: Colour LCD

Display resolution: C90: 800 x 480 pixels (WVGA); C120: 1280 x 800 pixels (WXGA); C140: 1280 x 800 pixels (WXGA)

Display size: C90: 229mm (9"); C120: 307mm (12.1"); C140: 358mm (14.1")

Display lighting: Sunshine visible / night mode

Connections: SeaTalk^{hs} (x2); SeaTalk (x1); SeaTalk^{ng} / NMEA 2000 (x1); Composite video input (PAL/NTSC) (1x); NMEA 0183 input (x3); NMEA 0183 output (x2); Alarm output (x1)

ORDERING INFORMATION

E62111-US C90W multifunction display (US version)

E62111-EU C90W multifunction display (European version)

E62111-RW C90W multifunction display (Rest of World version)

E62113-US C120W multifunction display (US version)

E62113-EU C120W multifunction display (European version)

E62113-RW C120W multifunction display (Rest of World version)

E62115-US C140W multifunction display (US version)

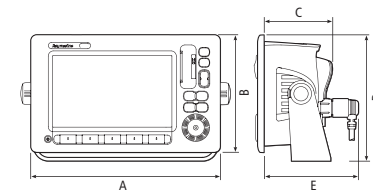
E62115-EU C140W multifunction display (European version)

E62115-RW C140W multifunction display (Rest of World version)

A62132 C90W trunnion mounting kit

A62133 C120W trunnion mounting kit

A62134 C140W trunnion mounting kit



Dimensions (mm)					
	A	B	C	D	E
C90	317	197	113	211	136
C120	380	245	113	260	136
C140	424	277	113	291	136



A SERIES CHARTPLOTTERS AND CHARTPLOTTER/FISHFINDERS



Harness the power of Raymarine's advanced engineering and exclusive technologies with the A Series displays. Navigate like a pro using high resolution 2D or 3D and aerial photo charts and target fish with unprecedented clarity using Raymarine's unmatched HD Digital sonar technology.

- Built-in GPS antenna.
- Built-in Navionics cartography.
- Built-in HD Digital fishfinder module on A50D and A57D.
- Built-in cable management system.
- Engine monitoring.

Powerful Chartplotting

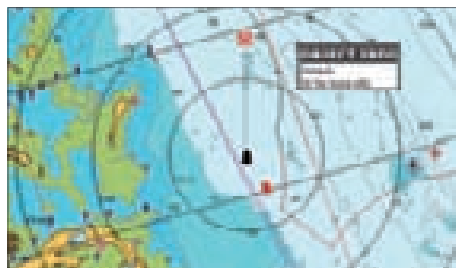
A Series chartplotters are available pre-loaded with Navionics charts that cover entire regions of Europe, US or the Rest of the World*. These charts offer familiar paper-like cartography that's clear and easy to read at all zoom levels, user selectable safety contours and object information.

For even greater chart detail and features, upgrade to the optional Navionics Gold or Platinum charts.

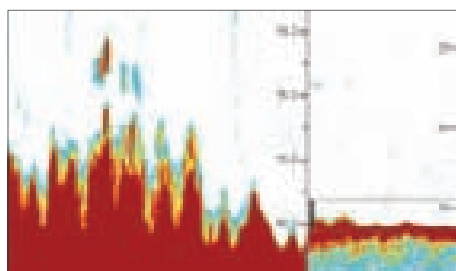
HD Digital™ Fishfinder

A Series chartplotter/fishfinders offer superior fish detection and bottom discrimination using Raymarine's HD Digital sonar technology. The HD Digital Fishfinder built into the A50D and A57D instantly adapts to changing seabed and water conditions for fully automatic hands-off operation.

* Pre-installed Navionics cartography excludes Greenland and Iceland, Finnish and Russian Lakes, EU and Russian inland waterways. Rest of the World cartography excludes the coast of China.



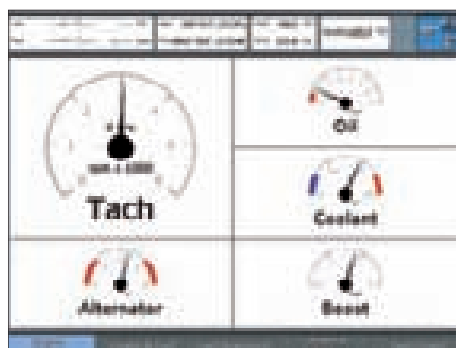
Powerful chartplotting



HD Digital Fishfinder



AIS target tracking



Engine monitoring

AIS Target Tracking

Transform any A Series chartplotter into an AIS (Automatic Identification System) display using the optional AIS350 receiver or AIS650 transceiver.

Engine Monitoring

Connect with NMEA2000 compatible engine instruments and trim tabs using Raymarine SeaTalk^{ng} next generation data bus.

P48 Ultra wide fanbeam transducer option



Engineered for shallow water coastal, lake and river fishing, the unique FanBeam transducer delivers an extra wide elliptical view of the bottom. In addition to a very wide beam the Fanbeam can be rotated fore and aft or port and starboard with an easy-to-use rotary beam control built right into the top of the transducer housing. The FanBeam transducer is designed for transom or trolling motor mounting and features a built in temperature sensor.

Fanbeam features

- 3x the beam width of conventional 200 kHz transducers.
- Unique beam rotation control built into the transducer housing.
- 200 kHz frequency for fishing up to 300 feet of water.
- Elliptical wide beam is 38° x 12° degrees wide at -3dB (maximum measured power).
- The FanBeam transducer is available as an option for all A Series Chartplotter/ Fishfinders.



	A50	A50D	A57	A57D
A Series LCD Display Size – mm (in)	127 (5)	127 (5)	144 (5.7)	144 (5.7)
GPS / Chartplotter	•	•	•	•
HD Digital Fishfinder		•		•

SPECIFICATIONS

Nominal voltage: 12V DC

Absolute voltage range: 10.7 – 16V

Power consumption: 6–8W. 18W peak with sonar

Weight inc. bracket kg (lbs): A50/A50D 1.36 (3.0);

A57/A57D 1.46 (3.2)

Display type: Colour TFT LCD

Display resolution: 640 x 480 pixels (VGA)

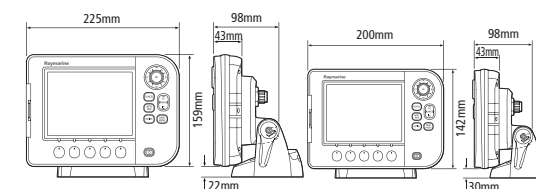
Display size: A50/A50D 127mm (5"); A57/A57D 144mm (5.7")

Illumination: Screen and keypad

Connections: NMEA 0183 input (x2); NMEA 0183 output (x2); Selectable to 4800, 4800 Navtex; 9600 Navtex or 38,400 AIS; SeaTalk^{ng}; sonar / transducer (7-way connector); Compact Flash slot

ORDERING INFORMATION

E62184	A50 Chartplotter no cartography or transducer
E62342	A57 Chartplotter no cartography or transducer
E62184-EU	A50 Chartplotter – EU cartography no transducer
E62342-EU	A57 Chartplotter – EU cartography no transducer
E62184-RW	A50 Chartplotter – RoW cartography no transducer
E62342-RW	A57 Chartplotter – RoW cartography no transducer
E62186	A50D Chartplotter/fishfinder with P58 triducer – no cartography
E62188	A57D Chartplotter/fishfinder with P58 triducer – no cartography
E62186-EU	A50D Chartplotter/fishfinder with P58 triducer – EU cartography
E62188-EU	A57D Chartplotter/fishfinder with P58 triducer – EU cartography
E62186-RW	A50D Chartplotter/fishfinder – RoW cartography
E62188-RW	A57D Chartplotter/fishfinder – RoW cartography
A10238	P58 Triducer
A62154	A Series flush mount kit
A102140	P48 Fanbeam transducer



Dimensions (mm)					
	A	B	C	D	E
A50/A50D	200	142	30	43	98
A57/A57D	225	159	22	43	98

VOYAGE PLANNER DATA MANAGEMENT LIBRARY

Voyage Planner is a powerful, easy-to-use, home-planning and data management software solution for Raymarine multifunction displays.

Voyage Planner allows you to effortlessly manage waypoints, routes and tracks between your vessel's multifunction display and your home planning PC. It also allows real-time import and export with a PC whilst onboard. You can sync wirelessly via SeaTalk^{hs} (Ethernet) or the internet via a WiFi or router equipped PC or laptop. Alternatively, you can use a traditional Compact Flash (CF) card.

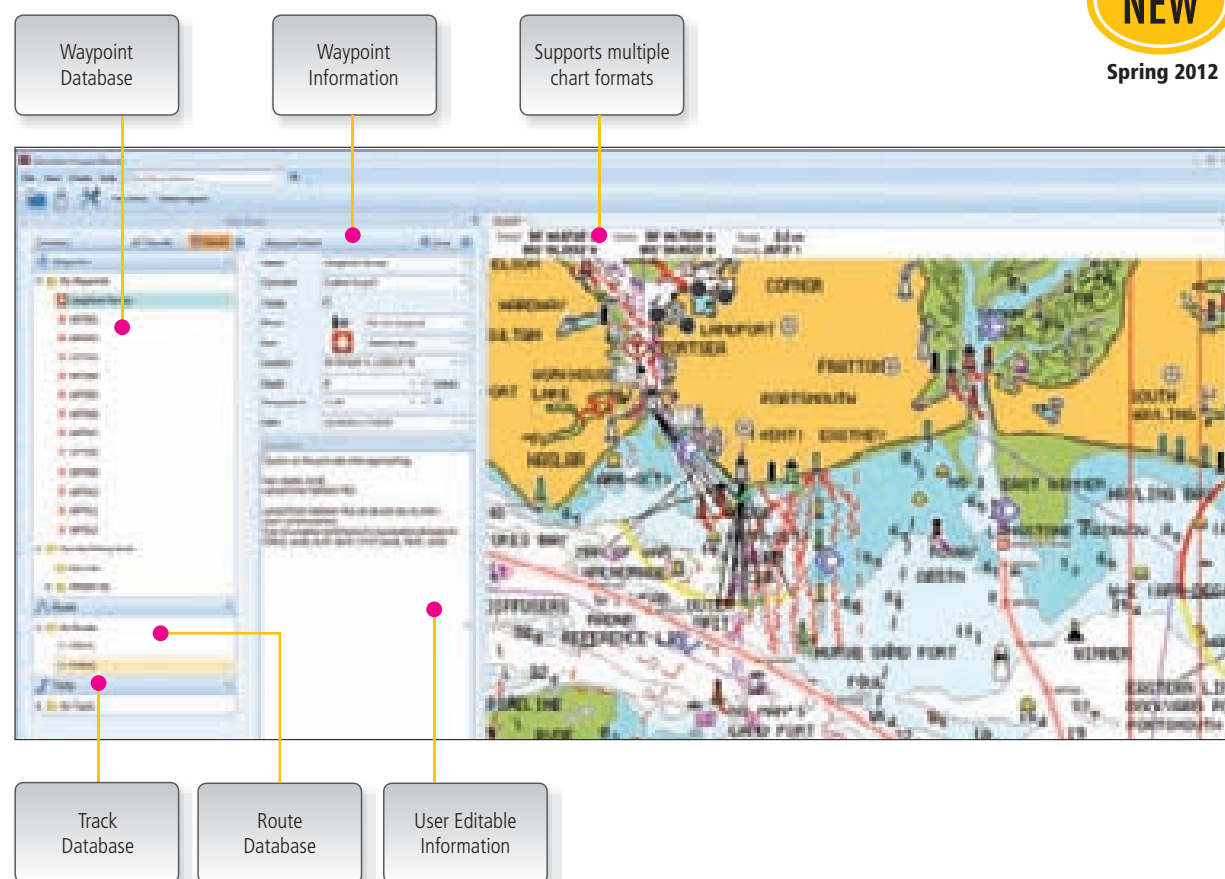
Voyage Planner imports and exports to Raymarine, GPX and KMZ formats.



PHOTO: ISTOCKPHOTO



VoyagePlanner



NEW
Spring 2012

Core Features include:

- Intuitive and lightening fast waypoint, route creation and edits.
- Instant on-the-fly SeaTalk^{hs} or WiFi sync of waypoints and routes between your Raymarine multifunction display and Voyage Planner.
- Easy waypoint, route and track transfer via CF or microSD card.
- Multiple charts in tab or tile view.
- Distance and bearing tool.
- Link digital photos to the map.
- Depth soundings in feet or metres.

Choice of Cartography

- FREE Ready-to-Navigate cartography cut when you register a multifunction display with Ready-to-Navigate cartography embedded.
- Navionics Gold/Platinum+ and HotMap plug-n-play chart cards (No card reader required. Requires N-Tag enabled chart card).
- NV Digital, Solteknik, NOAA ENC and RNC charts of USA waters via free, automatic download.
- Extras include: GRIBs, Google Earth, TurboView (available Spring 2012).

Note: Product information subject to change.

VoyageXChange

The Voyage XChange website allows you to store your waypoints and routes and share with friends on Facebook, purchase charts for use in your Raymarine multifunction display or Voyage Planner software, and more;

- Share routes and waypoints on Facebook.
- Purchase a wide variety of charts for use with your multifunction display or Voyage Planner software.
- Low-cost annual subscription – FREE 12 month access with the purchase of Voyage Planner software.



Voyage XChange. Share your voyage with friends on Facebook.

ORDERING INFORMATION

- | | |
|----------------|--------------------------------|
| E112116 | Voyage Planner (Web Download) |
| E112115 | Voyage Planner (Boxed Product) |



CLEARPULSE SONAR IMAGING... SEE THE DIFFERENCE

Raymarine Digital Sonar Modules bring the benefits of Raymarine's award winning ClearPulse sonar technology to the Raymarine multifunction displays and software.

- ClearPulse technology eliminates surface clutter and water column noise, revealing more fish.
- ClearPulse processing delivers the most life-like bottom structure presentation without the need for manual tuning or adjustments. The operation is truly "hands-off."

- Raymarine's ClearPulse processing marks individual bait fish and game fish, even when tightly packed together, or stacked vertically
- ClearPulse visually separates bottom dwelling fish from the ocean bed/floor.

Sonar features

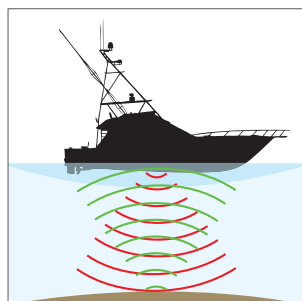
- Raymarine's patented ClearPulse sonar technology via a remotely mounted Digital Sonar Module.
- Hands-free ClearPulse technology automatically adjusts more than 220 sonar parameters per second and virtually eliminates clutter.
- ClearPulse adaptive receiver technology precisely targets fish and bottom structure with amazing clarity.
- Bottom lock, A-Scope and Zoom modes.
- Auto adaptive control of sensitivity, ping rate and transmit power.
- Four sonar presets for one touch access to your favourite views of split screen, frequency, zoom, bottom lock and more.
- Bottom structure and target detail are delivered in native resolutions up to 1280 x 1024 pixels.
- Automatic "hands off" operation for a dramatically clearer picture.
- Full range of high and ultra high performance transducers available.

ClearPulse CHIRP Technology

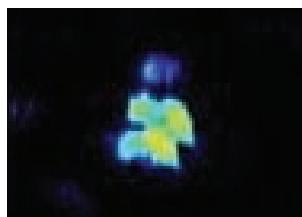
Conventional sonar modules transmit and listen to at a single frequency with each pulse. CHIRP transmissions allow more sonar power to penetrate the water – in fact x10 more power when compared to conventional sonar modules. ClearPulse CHIRP technology takes advantage of a wide spectrum of sonar signals to deliver amazing detail and accuracy.

ClearPulse CHIRP Features

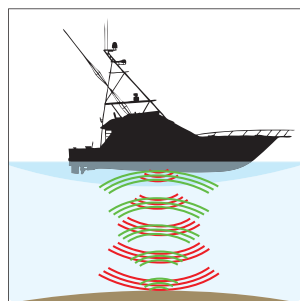
- Patented ClearPulse digital sonar technology.
- Sharper, well defined echoes.
- Cleaner, noise-free display with enhanced inter-ping processing and comparison data.
- Better shallow water, bottom tracking and thermocline recognition thanks to improved signal to noise ratios, reverb and interference rejection.
- Surpasses conventional sonar with accurate performance from 2 to 10,000ft (dependent on transducer used).



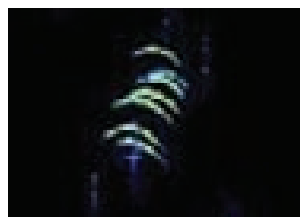
Conventional Sonar – listens to a single frequency



Conventional Sonar
Targets can merge into one target.

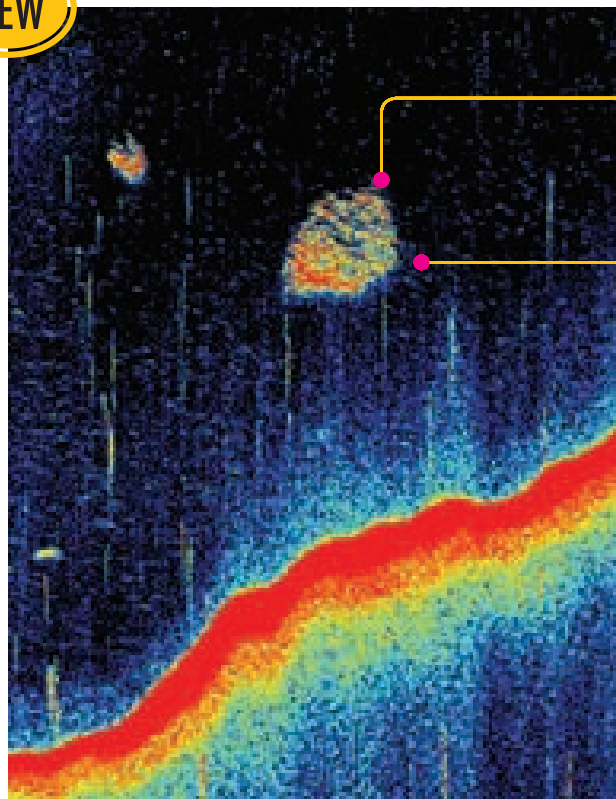


ClearPulse – CHIRP listens to a wider spectrum

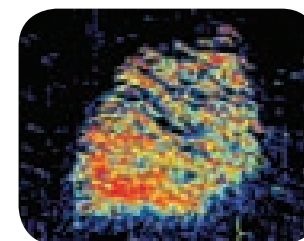


ClearPulse (CHIRP)
ClearPulse CHIRP reveals much greater detail.

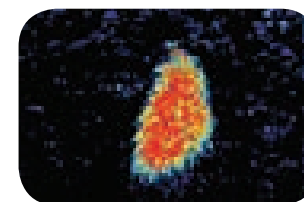
NEW



ClearPulse CHIRP High Frequency. High frequency performance provides greater detail in shallower waters.



ClearPulse CHIRP TruZoom.
TruZoom offers a precise magnified view without loss of resolution.



ClearPulse CHIRP Low Frequency. Low frequency performance allows you to see fish at greater depths.

CP450C Chirp Broadband Sonar

The CP450C with ClearPulse CHIRP technology goes beyond high definition and offers increased resolution and deeper depths.

- TruZoom™ mode for a precise magnified view of fish targets, bottom structure and baitfish without any loss of resolution seen with traditional sonar.
- High-speed scrolling (Fast Ping Rate) with 60 pulses a second and enhanced shallow water and high-speed operation.
- Power supply monitoring – useful when drifting and you have no battery charge.
- SeaTalk^{hs} Ethernet network port – new waterproof Raynet connector.
- Network compatible with e7 and future Raymarine network multifunction displays.

- Dual CHIRP transceivers – 2 independently adjustable channels (two sonars in one). Each channel can be customised to specific frequency bands along with independent manual and auto adjustment settings.
- Low, medium and high frequencies for excellent performance at all depths – supports CHIRP transmissions from 25 to 250kHz with exclusive mid-band frequency support in the 75 to 130 kHz range as well.

No matter what you fish for, no matter where they hide, CHIRP has the capability to detect and target the fish you want to catch!

HD Digital Sonar Technology

Target Fish

Thanks to HD Digital technology, anglers can easily identify individual species of fish and their habitat at a glance and distinguish bait fish from larger species.

A-Scope and bottom coverage

See fish and the seabed in real time – A-Scope technology instantaneously displays the echoes found in the transducer's acoustic beam. Using the patented bottom coverage feature, you can easily see the size of the area of seabed covered by the transducer cone.

Bottom lock

Has the unique ability to smooth out the seabed presentation and is very useful if you are looking for fish that live close to the ocean floor. It gives greater magnification of fish echo returns directly above the seabed, helping you differentiate structure from fish.

Zoom

Use auto zoom to help you find fish and their habitat close to the bottom, or select manual zoom for a detailed view of fish closer to the surface. Pinpoint fish echoes with x2, x3 and x4 zoom magnification.

DSM30/300 Dual or DSM400 multiple frequency

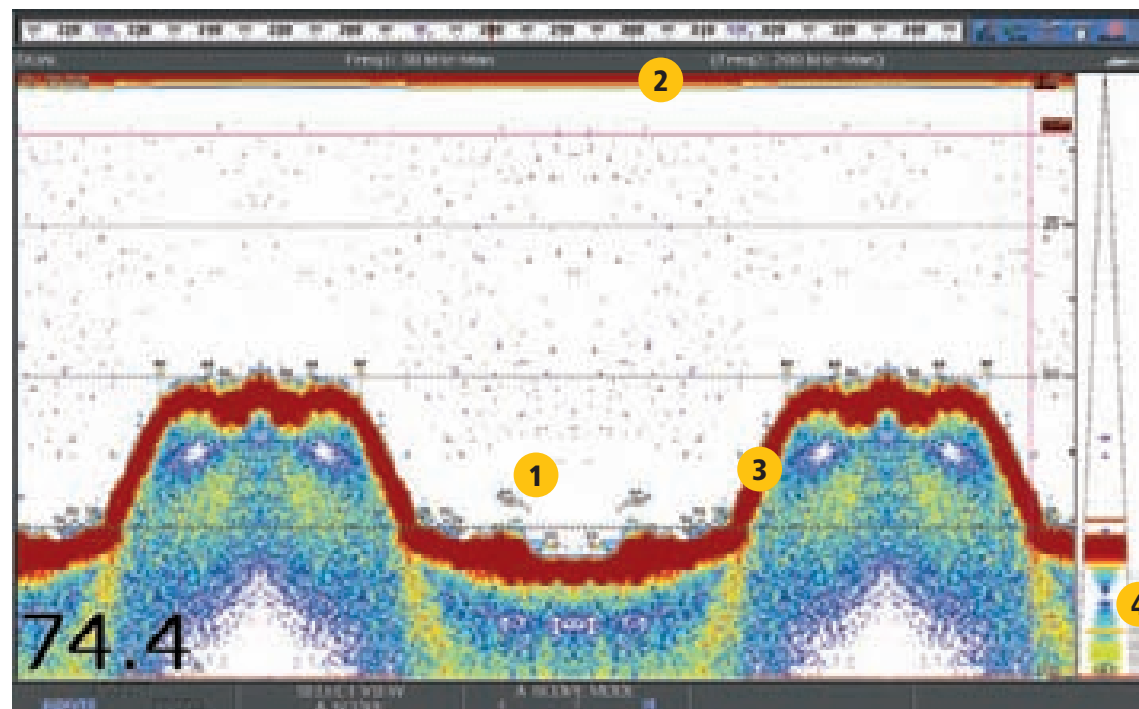
For top performance in shallow and deep water, powerful dual or multiple frequencies conveniently allow you to choose your frequency manually or use the auto frequency function. Choose to display one frequency in easy-to-read full screen mode or view up to 4 multiple frequencies (dependent on transducer setup) simultaneously in split screen mode.

DSM30 HD Digital sonar module

The DSM30 is the ideal choice for the coastal and inland fishermen. The DSM30 Digital Sonar Module features Raymarine HD Digital sonar technology, dual frequency (50/200kHz) and 600 Watts of output power.

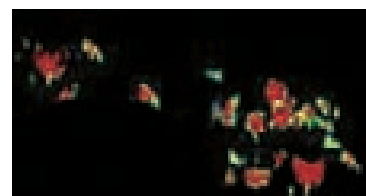
DSM300 HD Digital sonar module

The DSM300 is the perfect choice for offshore anglers. Boasting up to 1kW of output power (depending on choice of transducer) the DSM300 Digital Sonar Module features Raymarine HD Digital sonar technology and dual frequency (50/200kHz) operation.

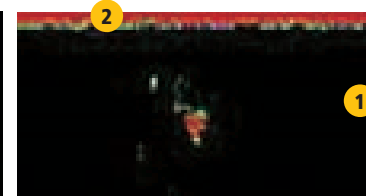


HD Digital Sonar

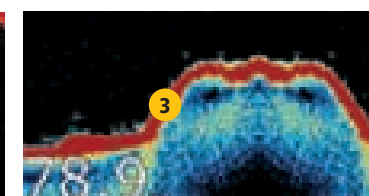
The following images highlight some of the typical features available with Raymarine HD Digital sonar.



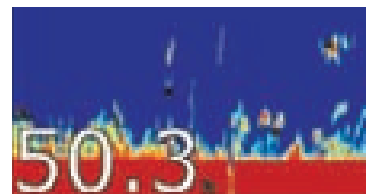
Individual targets. Targets are identified individually so you can pick out big fish from bait fish.



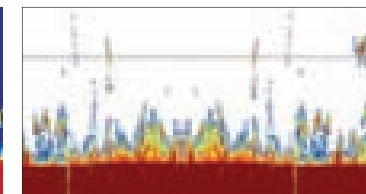
Eliminate Clutter. HD Digital eliminates surface clutter for superior performance.



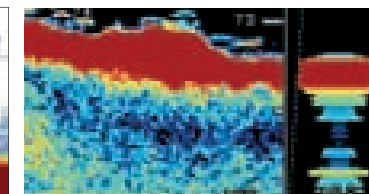
View the sea bed. HD Digital enables you to view the sea bed clearly and in great detail.



Zoom. x2, x3, x4 zoom for enlarged view of targets.



Bottom Lock. Flattens the seabed so that objects on or just above are easier to see.



A-Scope. See fish echoes and bottom returns in real time with the A-Scope feature.

DSM400 HD Digital sonar module

The DSM400 delivers the power and performance serious offshore fishermen demand. Operating at 1, 2 or 3 kW transmitting power, the DSM400 supports dual depth transducers and 28, 38, 50, 185 and 200 kHz frequencies.



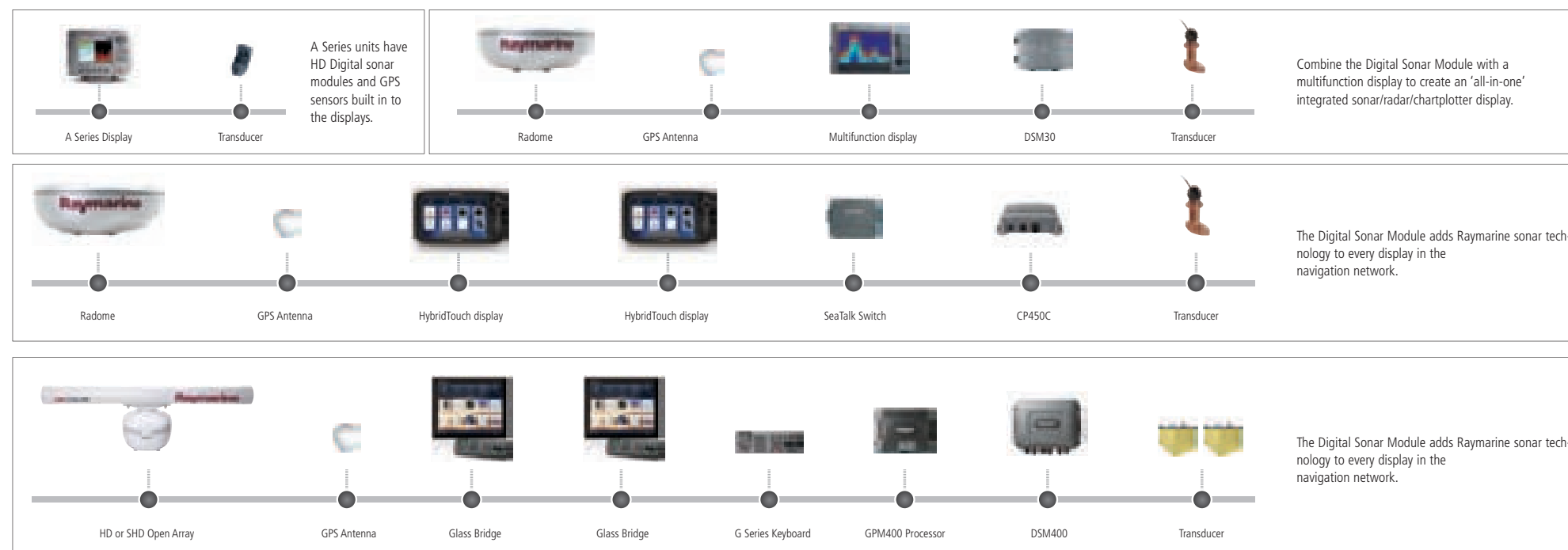
DSM30 and DSM300

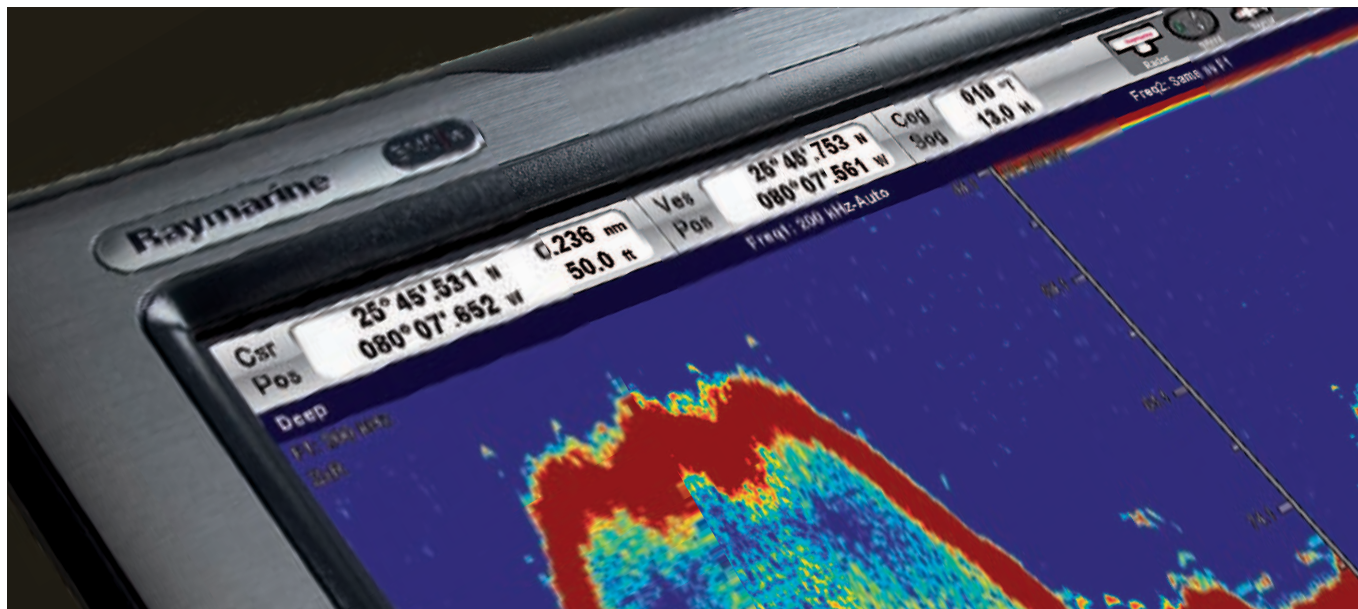


DSM400



PHOTO: CRUISECRRAFT





100

[illegible]

Transducers

Choosing the right transducer for your sonar is based on several parameters; type of boat, hull design and usage. Through-hull with fairing blocks offer best performance, especially at higher speeds. Through-hull flush mounts are best for trailer boats where good performance is required and there are no protrusions from the hull. These are available in 0°, 12° and 20° tilt angles to accommodate various hull dead rises. In-hull transducers do not penetrate the hull, but do sacrifice some performance. Other parameters include matching the transducer's maximum power capability to the sonar's maximum power output: a 1kW sonar should be used with a 1kW transducer, although a lower power sonar can be used with a transducer that accepts more power for increased performance. Typically, larger transducers will provide better performance regardless of the sonar.



HIGH PERFORMANCE TRANSDUCERS										
PART NO.	MODEL	MATERIAL	FEATURES			FREQUENCY (KHz)	MAX POWER WATTS	USE		
			DEPTH	SPEED	TEMP			OB POWER	IB POWER	SAIL
In-Hull Transducers										
A102115	R299	Plastic	•			38/50/185/200	3000	•	•	•
A102117	R399	Plastic	•			28/38/185/200	3000	•	•	•
Through-hull Transducers										
A102114	R209	Plastic	•		•	38/50/185/200	3000	•	•	
A102116	R309	Plastic	•		•	28/38/185/200	3000	•	•	
A102118	SS270 Wide B'm	S/Steel	•		•	50/200	1000	•	•	•
Sensors										
A102119	CS4500	Plastic		•	•	—	—	•	•	•
A102120	T42	Plastic			•	—	—	•	•	

TRANSDUCERS										
PART NO.	MODEL	MATERIAL	FEATURES			PERFORMANCE	MAX POWER WATTS	USE		
			DEPTH	SPEED	TEMP			OB POWER	IB POWER	W
Transom Mount Transducers										
E66054	P66	Plastic	•	•	•	Good	600	•	•	•
E66019	ST69	Plastic		•	•	—	—	•	•	•
In-Hull Transducers										
E66008	P79	Plastic	•			Good	600	•	•	•
A66089	M260	Plastic	•			Best	1000	•	•	•
E66076	R199	Plastic	•			Ultimate	2000	•	•	•
Through-hull Transducers										
A66091	B744V	Bronze	•	•	•	Good	600	•	•	•
A66092	B744VL	Bronze	•	•	•	Good	600	•	•	•
E66013	P319	Plastic	•			Good	600	•	•	•
E66014	B117	Bronze	•			Good	600	•	•	•
E66015	SS555	Stainless	•			Good	600	•	•	•
E66082	B258	Bronze	•		•	Better	1000	•	•	•
A102121	SS270 Wide B'm	S/Steel	•		•	Best	1000	•	•	•
E66079	B260	Bronze	•		•	Best	1000	•	•	•
E66075	R99	Plastic	•		•	Ultimate	2000	•	•	•
E66071	P120-ST800	Plastic		•	•	—	—	•	•	•
E66072	B120-ST800	Bronze		•	•	—	—	•	•	•
Tilted Element Through-Hull Transducers										
E66085	B60-20°	Bronze	•		•	Good	600	•	•	•
E66086	B60-12°	Bronze	•		•	Good	600	•	•	•
A102137	B164-0°	Bronze	•		•	Better	1000	•	•	•
A102112	B164-12°	Bronze	•		•	Better	1000	•	•	•
A102113	B164-20°	Bronze	•		•	Better	1000	•	•	•

High performance transducers

For maximum performance a wide range of professional grade transducers are available for the DSM400. Choose multiple external mount or high performance in-hull transducers. In-hull transducers help eliminate cavitation and turbulence for improved performance at high speeds. Optional ultrasonic speed and high precision water temperature sensors are also available.



SPECIFICATIONS

Nominal voltage: DSM30 12V systems, DSM300, DSM400 and CP450C 12/24V Systems

Absolute voltage range: DSM30 10.7 – 18V DC; DSM300 & DSM400 10.7 – 32 V DC CP450C 10.2 – 32 V DC

Current consumption: 0.5A (8.0A peak – CP450C 6.0 A peak)

Frequency: DSM30 200kHz / 50 kHz; DSM300 Dual 200kHz / 50 kHz; DSM400 28 / 38 / 50 / 185 / 200 kHz and CP450C 25 to 255 kHz

Nominal power output: DSM30: 600W; DSM300: 1000 or 600W; DSM400 1 / 2 / 3 KW (transducer dependant) and CP450C 1KW

Temperature range: -10°C to +50°C operating; -20°C to +70°C non operating. CP450C -20 to +50°C operating and -30° to +70°C non-operating

Humidity: up to 95%

Waterproofing standard: CFR46 and IPX6 (DSM400: CFR46)

Weights: DSM30 / DSM300 1kg (2.2lbs); DSM400 12.25kg (27lbs); CP450C 1.54kg (3.38lbs)

ORDERING INFORMATION

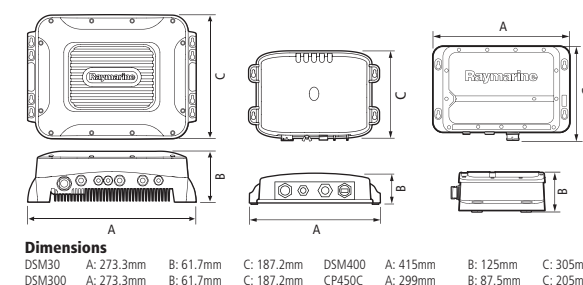
E63074 DSM30 600 Watt HD Digital Sonar Module

E63069G DSM300 1kW HD Digital Sonar Module

E63072 DSM400 3kW HD Digital Sonar Module

E102143 CP450C CHIRP Sonar Module

For A Series, turn to pages 48-49



Dimensions

DSM30	A: 273.3mm	B: 61.7mm	C: 187.2mm	DSM400	A: 415mm	B: 125mm	C: 305mm
DSM300	A: 273.3mm	B: 61.7mm	C: 187.2mm	CP450C	A: 299mm	B: 87.5mm	C: 205mm



**RAYMARINE RADOME AND
OPEN ARRAY RADAR ANTENNAS.
DELIVERING UNMATCHED
PERFORMANCE AND
EASE-OF-USE.**

PHOTO: GALEON

Why radar?

Where are you relative to your surroundings? Is there anything nearby that could be a danger to you, or vice versa? Radar is a great aid to navigation that allows you to:

- 'See' other vessels, buoyage and coastline in zero visibility
- Track targets – not everything transmits AIS...
- Double check your relative position and speed
- Avoid hazards and obstacles
- Track weather
- Find fish!

Each Raymarine marine radar system consists of a Raymarine multifunction display (excluding A Series displays), and your choice of Raymarine radome or open array antenna.

Hardware – Radome or Open Array?

Radomes

Digital or HD Color Radomes are ideal when power is at a premium and mounting space is limited or restricted by rigging. Perfect for sailboats, RIBs and smaller powerboats, radomes provide exceptional performance even in the most challenging conditions – HD Color Radomes provide additional features and improved resolution.

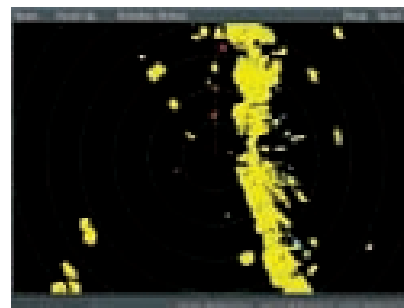
Open Arrays

Choose an HD Color or Super HD Color open array scanner for enhanced performance and range. These larger scanners, equipped with a more efficient antenna (increased gain) and narrow beam widths, deliver substantial improvements in range and bearing resolution giving great performance and clear target separation.

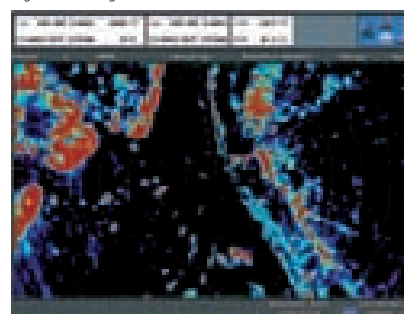
Technology and Software – what's the difference?

Raymarine has 3 different types of radar antenna:

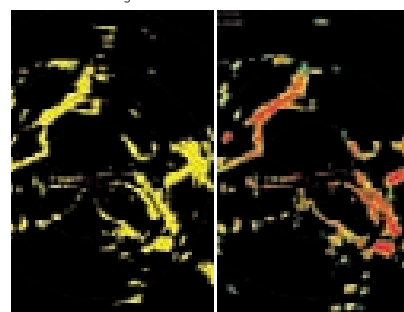
- (1) Digital – 8 colour resolution
- (2) HD Color – 256 colour resolution
- (3) SHD Color – 256 colour resolution



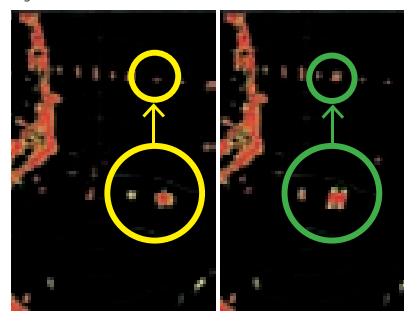
Digital radar image.



HD Color radar image.



Digital vs HD Color radar.



HD Color vs Super HD Color radar.

Digital radar

Offers 4kW capability for improved performance and uses digital processing for increased target definition. Digital reduces the cable size (compared to analogue) and makes an easier interface to larger systems. Lower power consumption and costs less than a full HD Color system.

HD Color radar

Raymarine's HD Color radar utilises powerful signal processing technologies that help distinguish between target types, detects weak and distant contacts automatically, while virtually eliminating clutter and noise. The truly adaptive transmitter and receiver automatically adjusts to changing environmental and sea conditions. With full 256 colour resolution, HD Color radar delivers a dramatically clearer radar picture with crisp, well-defined contact echoes, superior target separation, and a life-like target presentation.

Super HD Color radar

Super HD Color radar is a giant leap in leisure marine radar. Using highly advanced digital signal processing, Super HD Color radar has much greater dynamic range than conventional radar enabling the digital receiver to acquire and process vast amounts of echo information that is normally lost by conventional analogue radar systems. With full 256 colour resolution, Super HD Colour technology intelligently isolates and identifies true radar targets, while simultaneously eliminating unwanted clutter. The extra-narrow beam width pinpoints targets with stunning clarity. The result is a dramatically clearer radar display.

IMAGE COMPARISON

Digital vs HD Color

HD Color targets are clearly defined compared to the standard Digital image.

HD Color compared to Super HD Color

Super HD Color reveals even more detail than HD Color. The Super HD Color image shows that there are actually two targets in the ringed area, whereas the same targets on the HD image appear as one.

256
COLOR HD+SHD

256 colour separation helps define the strength of target returns and highlights targets that could be hidden within clutter

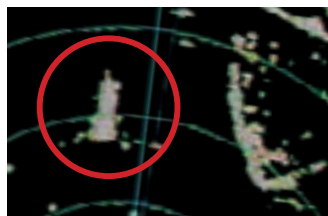


PHOTO COURTESY OF NORTHSORE YACHTS LTD

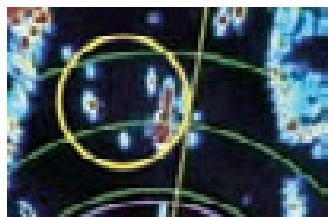


PHOTO COURTESY OF NB MARINE

Super HD Color vs. commercial 25kW radar comparison. Target separation on longer range scales (6nm) is greatly improved. Super HD Color processing detects and separates targets undetected by the larger commercial-grade radar.



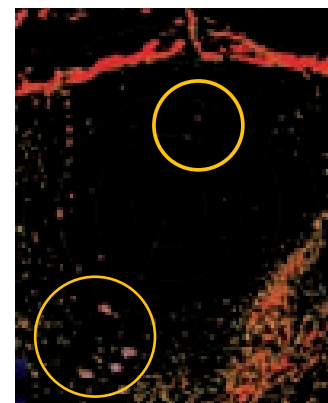
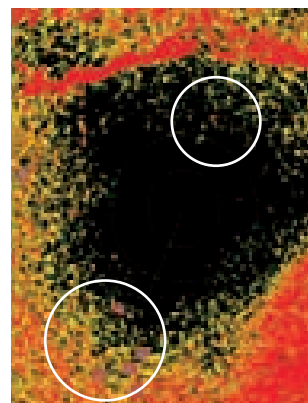
25kW 8.5' commercial radar merges targets.



Super HD Color radar clearly shows liner, tug and spectator sailing vessel.

Weather advantage

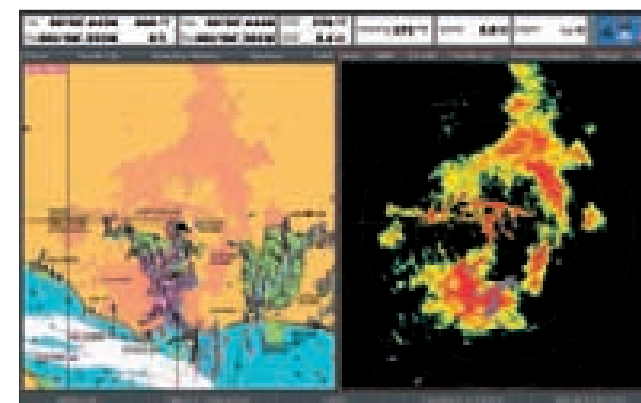
Raymarine's HD Color scanners provide superior all weather performance allowing you to still see targets through rain and thunderstorms. Use radar to track weather too.



During this abnormally heavy rain storm (see left hand image), rain mode was used to cut the clutter to clearly reveal the targets (see right hand image).

Cut the clutter

Detect targets at very close proximity to your vessel, right through to very long ranges to see distant vessels, land features and even weather fronts. Distinguish targets through even the heaviest rain clutter.



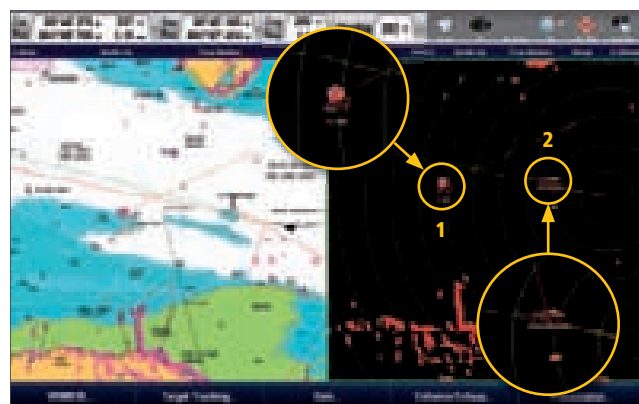
Use the radar to see the weather coming, then use the radar overlay to map the weather pattern onto the chart.

An array of advanced operating modes are available via on-screen menus and soft-key functionality.

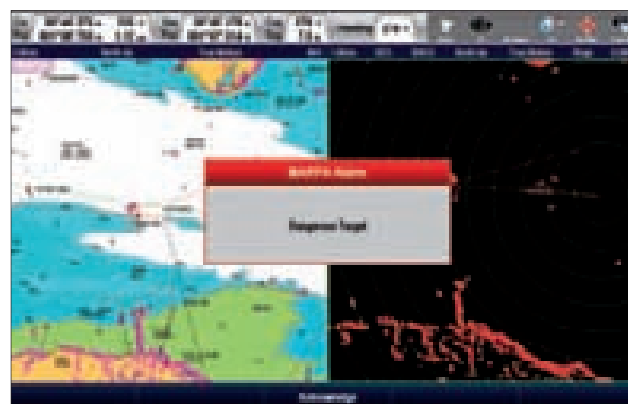


Track targets. Not everything transmits AIS! Using MARPA* (mini-automatic radar plotting aid) allows you to identify vessel, speed, bearing, closest point of approach (CPA) and time to closest point of approach (TCPA), dangerous/proximity alarms, overlay AIS info for further target clarification.

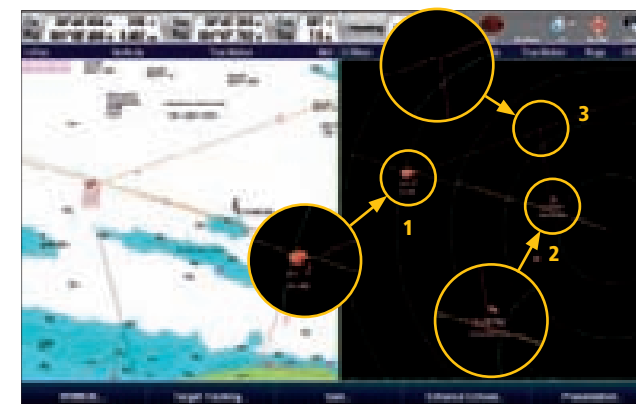
256
COLOR HD+SHD



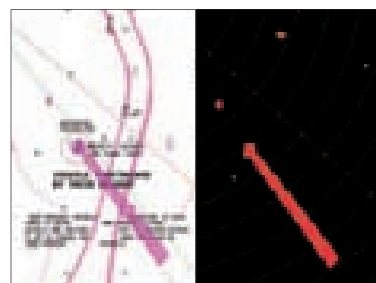
Target (1) has been acquired (red circle overlay) using MARPA and is being tracked by your radar. Speed and bearing of the target are shown and the target's heading is shown as a thin red line at 65°(2).



The tracked target has now moved into the previously set guard zone around your vessel and has triggered the dangerous target alarm, seen on screen, and set off an audible alarm.



The alarm has been acknowledged and the target's (1) (now overlaid with a red triangle to note possible danger) closest point of approach (CPA) to your vessel is shown on screen as 0.376nm (3) and time to closest point of approach (TCPA) is 4 mins 20 secs (2).



Racon and SART

Raymarine radar antennas also trigger RACON beacons and pick up signals from Search And Rescue Transponders.

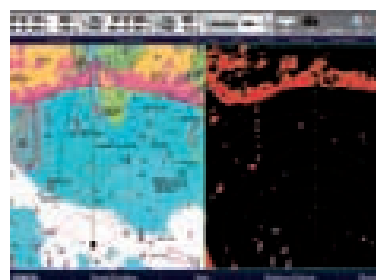


Chart Overlay

Radar can be overlaid onto a chart, as shown in the left hand image, to clearly identify targets. Note the superior target clarity and separation on the submarine barrier to the left of both screens.

Important Information

Safe emissions. Powerful enough to slice through atmospheric clutter, Raymarine radars still comfortably meet International limits Radio Frequency emissions – in fact, the energy absorbed from an ordinary mobile phone can be several times greater than that from a correctly installed Raymarine radar.

Installation. All radars work on line-of-sight principles so although antennas could theoretically be fitted almost anywhere, unobstructed and parallel to the water line is better.

Interference resistance. Raymarine radars use interference rejection technology to resist signal interference from other vessels' transmissions as well as close proximity objects already fitted to the boat.

256 colour resolution. helps define the strength of target returns and highlights targets that could be hidden within clutter.

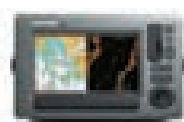
Pulsed magnetron vs broadband (FMCW) radar technology.

Broadband (FMCW) radars typically emit low levels of energy, resulting in loss of ultimate performance in conditions of fog, rain, spray and snow, and limiting target detection at longer ranges.

Raymarine pulsed magnetron radars combine low average energy with high peak powers allowing the radar to detect targets at greater ranges, and to punch through adverse weather conditions ensuring targets are identified.

RACON and SART. Raymarine radar antennas also trigger RACON beacons and home in on signals from Search And Rescue Transponders.

* For the best radar overlay and MARPA performance fit a smart heading sensor or an SPX autopilot course computer.



RADAR – MULTIFUNCTION DISPLAY COMPATIBILITY*			
	C SERIES WIDESCREEN	HYBRIDTOUCH DISPLAYS	GLASS BRIDGE
Digital radar	•	•	•
HD Color and Super HD Color	•	•	•
Dual range	With HD Color/Super HD Color radar only	With HD Color/Super HD Color radar only	With HD Color/Super HD Color radar only
Bird mode and high speed radar scanning (48rpm)	With HD Color dome and Super HD Color open array only	With HD Color dome and Super open array only	With HD Color dome and Super HD Color open array only
Dual radar antenna installation		Yes but accessible one at a time, one or the other	Can access both radars at the same time

* For previous multifunction display compatibility, please check www.raymarine.com

Raymarine






PHOTO COURTESY OF REDBAY RIBS



PHOTO COURTESY OF ALMUT

RADOME AND OPEN ARRAY FEATURES COMPARISON

		Peak power output (kW)	Maximum range scale	Colours	Rotation rate	Signal processing	Horizontal beam width -3dB	Vertical beam width -3dB	Near and far dual range mode	Bird mode	Pulse length / PRF (auto target / expand)	Weight kg	Automatic harbour, coastal offshore and buoy modes**	256 multi-level colour and selectable colour palettes	SeaTalk ⁴ networking	C Series Widescreen compatible	HybridTouch Displays	Glass Bridge
	18" RD418D	4	48	8	24	Digital	4.9°	25°			8	9.5	●		●	●	●	●
	24" RD424D	4	48	8	24	Digital	3.9°	25°			8	10	●		●	●	●	●
	18" RD418HD	4	48	256	24/48	HD Color	4.9°	25°	●	●	8	9.5	●	●	●	●	●	●
	24" RD424HD	4	48	256	24/48	HD Color	3.9°	25°	●	●	8	10	●	●	●	●	●	●
	48" RA1048D	4	72	256	24	HD Color	1.9°	25°	●		8	25.6	●	●	●	●	●	●
	48" RA1048SHD	4	72	256	24/48	Super HD Color	<1°*	25°	●	●	8	25.6	●	●	●	●	●	●
	48" RA3048HD	12	72	256	24	HD Color	1.9°	25°	●		8	25.6	●	●	●	●	●	●
	48" RA3048SHD	12	72	256	24/48	Super HD Color	<1°*	25°	●	●	8	25.6	●	●	●	●	●	●
	72" RA1072D	4	72	256	24	HD Color	1.15°	25°	●		8	29	●	●	●	●	●	●
	72" RA1072SHD	4	72	256	24/48	Super HD Color	<1°*	25°	●	●	8	29	●	●	●	●	●	●
	72" RA3072HD	12	72	256	24	HD Color	1.15°	25°	●		8	29	●	●	●	●	●	●
	72" RA3072SHD	12	72	256	24/48	Super HD Color	<1°*	25°	●	●	8	29	●	●	●	●	●	●

* Horizontal beam width on Super HD Color open arrays adjustable to less than 1° ** Digital domes only provide Harbour, Coastal and Offshore auto modes for the Sea Clutter adjustment. All others provide presets for Buoy, Harbour, Coastal and Offshore.

Just a few examples of the elements that you might see with your Raymarine radar:

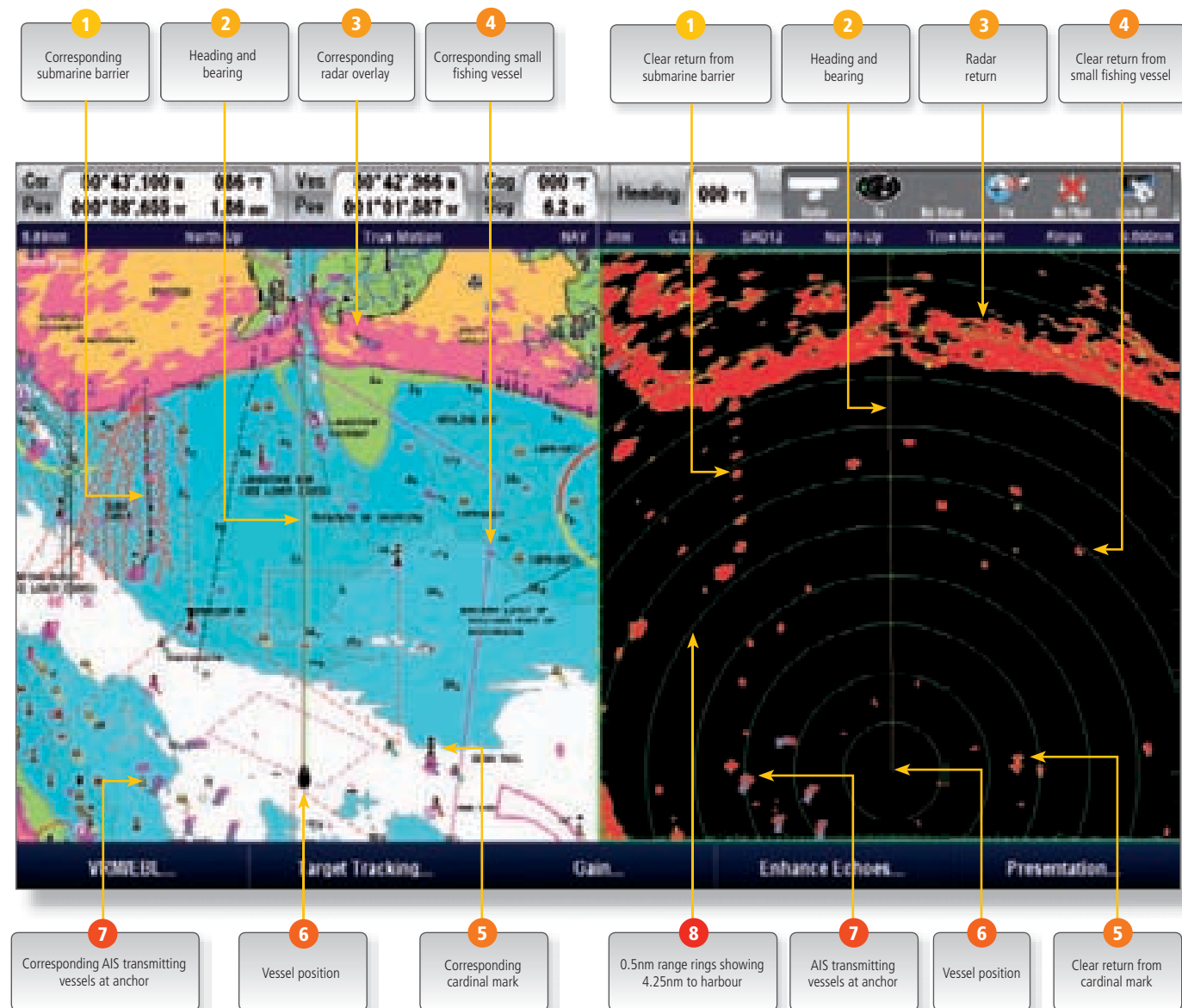


Chart view with corresponding radar overlay

Radar display





PHOTO COURTESY OF SARINIS BOATS LTD (MINOR OFFSHORE)

RADAR SPECIFICATIONS

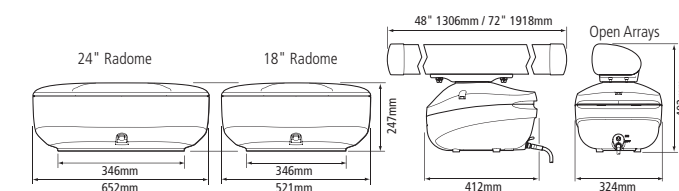
System Voltage: 12 / 24V Systems**Voltage range:** 10.8 – 32 V DC

Power consumption:	Typical	Standby	Sleep
Digital Radome (@ 24V):	40W (@ 24rpm)	25W	1.2W@24V
HD Color Radome (@ 24V):	45W (@ 48rpm)	25W	1.2W@24V
Open Array 4kW (@ 24V):	70W (@ 48rpm)*	30W	1.2W@24V
Open Array 12kW (@ 24V):	100W (@ 48rpm)*	30W	1.2W@24V

Transmitter frequency: 12kW radar 9420 ± 20 MHz. All other radar 9405 ± 20 MHz**Temperature range:** -10°C – +55°C operating -20°C – +70°C non operating**Humidity:** Up to 95%**Waterproofing standard:** IPX6**Resolution:** 256 colours

ORDERING INFORMATION

E92130	RD418D 4kW 18" Digital Radome
E92132	RD424D 4kW 24" Digital Radome
E92142	RD418HD 4kW 18" HD Color Radome
E92143	RD424HD 4kW 24" HD Color Radome
T52071	RA1048D 4kW 48" HD Color Open Array (15m cable) System
T52074	RA1072D 4kW 72" HD Color Open Array (15m cable) System
T52085	RA1048SHD 4kW 48" Super HD Color Open Array (15m cable) System
T52087	RA1072SHD 4kW 72" Super HD Color Open Array (15m cable) System
T92168	RA3048HD 12kW 48" HD Color Open Array (15m cable) System
T92169	RA3072HD 12kW 72" HD Color Open Array (15m cable)
T52086	RA3048SHD 12kW 48" Super HD Color Open Array (15m cable)
T52088	RA3072SHD 12kW 72" Super HD Color Open Array (15m cable)
E52069E	4kW Pedestal Component HD Color (includes VCM100)
E52081E	4kW Pedestal Component Super HD Color (includes VCM100)*
E92160E	12kW Pedestal Component HD Color (includes VCM100)
E52082E	12kW Pedestal Component Super HD Color (includes VCM100)
E52083	48" Open Array Component Only HD Color
E52084	72" Open Array Component HD Color
E52092	48" Open Array Component Super HD Color
E52093	72" Open Array Component Super HD Color



* Includes 48rpm and bird mode.



STV SATELLITE TELEVISION ANTENNA SYSTEMS

Raymarine's Satellite TV antennas bring the same combination of high performance and ease-of-use to your onboard entertainment that you would expect from your home entertainment system. Housed in a compact dome, our antenna systems automatically track and receive satellite TV signals in almost any conditions – guaranteed quick, clear, reliable access to hundreds of digital channels.

PHOTO: GALEON

Better technology – better reception. Unique Wide Range Search (WRS) technology means Raymarine's antennas can identify and acquire satellite signals as quickly as possible. When you've got a fix on the satellite signal you want, the tracking algorithms will help ensure you keep it. They're built to cope with tough conditions, too. Dynamic Beam Tilting (DBT) continuously measures, and compensates for your vessel's heading, pitch and roll – keeping your antenna locked on a satellite for a clear picture, whatever the conditions.

33STV: The perfect choice for small power and sailboat owners from 6m–7.6m (20'–25') looking to experience the best in on-board entertainment.

37STV: The space saving 37STV system is designed for vessels between 7.6m–10.7m (25'–35'). At just 37cm (14.5") diameter, this antenna is perfect for tight locations.



Antenna Control Unit

- Provides power to the antenna • Displays antenna status • Contains diagnostic indicators • Enables manual satellite selection.
- Connects to PCs for easy upgrades

45STV: Multiple satellite receiver capabilities. A great blend of size and performance, the 45STV makes satellite television at sea a reality for owners of 10.7m–15m (35'–50') vessels.

60STV: The high-performance choice. The 60STV extends satellite coverage with enhanced satellite tracking in regions prone to weaker satellite signals. The 60STV satellite antenna system is designed for vessels 15m (50') and over. 60STV offers all the advantages of the 45STV, plus a few more. Automated Skew Control ensures maximum signal strength while under way by optimising the LNB skew position.

Dual or Quad LNB

Connect multiple television receivers and tune in to different channels on each television – the Dual systems (33 and 37STV) allow the connection of two television receivers and the Quad systems (45 and 60STV) allow four.



SATELLITE TV FEATURES

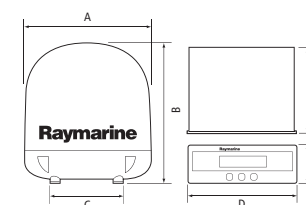
	33STV	37STV	45STV	60STV
Dual or Quad LNB design for multiple receivers	Dual	Dual	Quad	Quad
DVB (Digital Video Broadcast) compatible	●	●	●	●
Dish diameter (cm)	33	37	45	60
Wide Range Search Algorithm for high speed search and fast satellite acquisition	●	●	●	●
Dynamic Beam Tilting (DBT) technology signal tracking in extreme weather and sea conditions	●	●	●	●
High Definition (HD) compatible	●	●	●	●
Enhanced signal reception and improved antenna gain for better performance in poor weather				●
NMEA 0183 GPS position input capability for reduced acquisition time	●	●	●	●
Conical scanning detects strongest satellite signal for enhanced stabilisation	●	●	●	●
Enhanced elevation angles to maintain satellite fix				●
Automatic LNB skew control				●
Rotating sub-reflector redirects signal for reduced dish movement and quieter operation	●	●	●	●
Suggested vessel size	20' – 25'	25' – 35'	35' – 50'	over 50'
Built in GPS		●	●	●

SPECIFICATIONS

Operating voltage: 9 - 30V DC (All Generation 2 models)
Weight kg (lbs): 60STV: 19kg (41.8lbs); 45STV: 11.6kg (25.6lbs); 37STV: 9kg (19.8lbs) 33STV: 4.5kg (9.9lbs)
Frequency: Ku-Band
Azimuth range: 680°
Antenna gain: 33STV: 31dBi; 37STV: 32dBi; 45STV: 33 dBi; 60STV: 36 dBi
Minimum EIRP: 33STV: 51dBW; 37STV: 50 dBW
 45STV: 49 dBW; 60STV: 47 dBW
Elevation range: 33STV and 37STV: +10° to 80°; 45STV: 0° to +90°; 60STV +5° to +90°
Pitch and roll range: roll ±25° / pitch ±15°
Tracking rate: 33STV: 60°/sec; 37STV 60°/sec; 45STV: 50°/sec; 60STV 45°/sec

ORDERING INFORMATION

E93008-2 60STV EU, S. America Sky, M. East Gen 2 Antenna System
E93009-2 60STV DTV Latin America Gen 2 Antenna System
E93011-2 60STV China and New Zealand Gen 2 Antenna System
E93014-2 60STV N. America HD Gen 2 Antenna System
E42194-2 60STV Australia Gen 2 Antenna System
E93003-2 45STV EU, N & S America Sky, Russia and M. East Gen 2 Ant. Sys.
E93004-2 45STV China and New Zealand Gen 2 Antenna System
E93013-2 45STV N. American HD Gen 2 Antenna System
E42219-2 45STV DTV Latin American Gen 2 Antenna System
E42193-2 45STV DTV Australia Gen 2 -Antenna System
E93017-2 37STV N. American and Russia HD Gen 2 Antenna System
E93018-2 37STV EU Gen 2 Antenna System
E42128-2 37STV China and New Zealand Gen 2 Antenna System
E42192-2 37STV Australia Gen 2 Antenna System
E42171 33STV EU version
E42170 33STV N. America and Russia
E42220 33STV New Zealand



	Antenna (mm)			Control Unit (mm)		
	A	B	C	D	E	F
60STV	698	710	303	177	50	217
45STV	500	530	324	177	50	217
37STV	430	440	141x233	177	50	217
33STV	370	380	144	177	50	217



PHOTO: TURBINE TRANSFERS

RAYMARINE AIS RECEIVERS AND TRANSCEIVERS

Operating in the VHF maritime band, the AIS (Automatic Identification System) system enables the wireless exchange of navigation status between vessels and shore-side traffic monitoring centres. Commercial ships, ocean-going vessels and recreational boats equipped with AIS transceivers broadcast AIS messages that include the vessel's name, course, speed and current navigation status.

The benefits of AIS...

- **Transmit your position.** Fitting a Class A AIS device ensures you are seen by other AIS equipped vessels.
- **Vessel Protection.** As part of a suitably configured network, AIS enables owners to be alerted to unauthorised vessel movements.
- **Port Management.** AIS can be used as a highly effective port management tool allowing easy identification, control and direction of vessels.

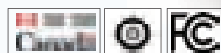
- **Coastal Surveillance.** AIS and radar can be fused to create effective and efficient coastal tracking, surveillance and safety systems.

Product Applications

- **AIS950:** Class A Transceiver for SOLAS vessels.
- **AIS650:** Class B Transceiver for sub-SOLAS vessels
- **AIS350:** Class B Receiver for sub-SOLAS vessels.



International type approvals include:



NEW

AIS950 with simulated data screen

AIS950 Class A AIS Transceiver

The AIS950 Class A receiver and transmitter is approved to deep sea and inland waterway standards and offers a highly intuitive user interface.

Features include:

- Fully compliant Class A AIS product in a single unit.
- Advanced radio communications technology
- Class A engine delivers unrivalled performance and reliability.
- User menu provides easy access to all information.
- Large, high visibility mono-chrome LCD
- Engineered to operate reliably for years in the toughest of environments and is constructed from a combination of marine grade plastics and metals.

AIS950 target list display (simulated)

13:20:47	OK	INT	GPA
TARGET LIST:			
NAME/MMSI	BNG(NM)	BBG(deg)	
MARY ROSE	001.5	354.0	
REGENT	003.0	013.0	
ANNE GALLANT	012.5	135.5	
235789543	015.0	003.0	
456723557	030.0	087.5	
Select		Screen	

AIS950 vessel details display (simulated)

13:20:47	OK	INT	GPA
VESSEL DETAILS:			
Station type:	Class A		
MMSI:	235687901		
Name:	>> MARY ROSE		
Call Sign:	MYR7A		
IMO No:	4325640		
Prev. vessel		Next vessel	

AIS950 CLASS A SPECIFICATIONS

Operating voltage: 10.8v to 31.2 DC

GPS Receiver (AIS Internal): IEC 61108-1 compliant

Peak current in normal operation: 900mA @ 12V and 500mA @ 24V

Average power consumption: <12W

Transmitters: x1

Receivers: 2x TDMA 156.025 MHz to 162.025 MHz and 1x DSC 156.525 (channel 70)

Receiver sensitivity: TDMA <-107dBm for 20% PER and DSC -107dBm @ BER <10⁻²

Connectors: RF - VHF antenna SO-239/VHF and GPS antenna TNC female; Data: RS232 9 way D and IEC 61162 50 way D; Power: 4 pin; NMEA 2000 in

Data interfaces: RS232 38.4k baud bi-directional (PC connection); IEC61162-2 bi-directional interfaces x 3; IEC61162-1/2 sensor inputs x 3; DGPS correction data input (ITU-R M.823-2); NMEA2000 for AIS data and GPS position output

User Interface: 240 x 128 LED backlit LCD display; Rotary encoder for selection and entry; Two soft keys & two menu keys; Alarm buzzer

Dimensions: 210 x 105 x 138mm (W x H x D)

ORDERING INFORMATION

E70050 AIS950 Class A AIS Receiver and Transmitter

Further Information:

For more AIS950 product information, please go to our website www.raymarine.com or visit your nearest Raymarine stockist.



PHOTO: JOE MCCARTHY



AIS650 Class B AIS Transceiver

Raymarine's AIS650 is a Class B AIS transceiver allowing you to transmit your data to other AIS equipped vessels, and receive and see their data on your Raymarine multifunction display's radar and/or chartplotter screen. The ultra-compact AIS650 is engineered for high performance and seamless integration with your Raymarine navigation system.

Features include:

- Dual-channel receivers – AIS vessel monitoring of class A and B transmissions.
- 50 channel RAIM compliant GPS receiver for superior accuracy.
- Hardware and software selectable Silent Mode for privacy or security. Silent mode turns off your AIS transmitter while still enabling you to see transmissions from other vessels.
- SeaTalk^{ng} networking for simple integration with current Raymarine multifunctional displays.

- Plug-and-play connection (USB 2.0) to PC navigation systems.
- SD Card Slot for recording of AIS data. AIS650 continuously records AIS information for accident reconstruction or incident investigation (recording time dependent on SD card used).
- Built-in NMEA multiplexer simplifies integration with legacy MFD display, VHF radios and 3rd party devices.

AIS350 Dual-Channel Receiver

The AIS350 is a dual-channel receive-only product designed for small boats wanting the increased situational awareness benefit of AIS, but without the need for Class B transmitting capability. This low cost alternative brings many of the safety advantages of AIS to a wider range of vessels than ever before.

AIS TARGET INFO SCREEN

(6) Position, heading and rate of turn (7) Target ID information (8) Target size (9) Course and speed over ground (10) Heading and bearing (11) Destination, estimated time of arrival, status and vessel type.

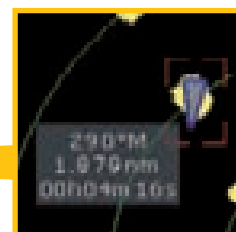
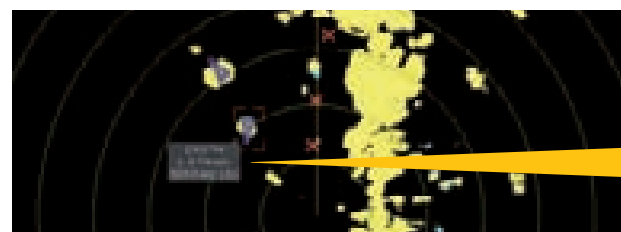
AIS Target Info - THE DIEGO			
Position	28°08'00N	119°00'00E	9
Heading	000°/0°/0°	0.0kts	10
ROT	000°/0°/0°	0.0kts	10
Size	2227MMSI	10/10/2000	7
Call sign	0123	10/10/2000	7
Net No	1234567	10/10/2000	7
Length	100m	10/10/2000	7
Beam	100m	10/10/2000	7
Weight	10000kg	10/10/2000	7
		10/10/2000	7



AIS TARGET LIST SCREEN

(1) List of AIS targets (2) Selected vessels details (3) Vessel position (4) Vessel heading and rate of turn (5) Course and speed over ground.

AIS Target List			
Pos.	Source/MMSI	Range	Range
1	235001000	1.500nm	134.0°
2	235001000	2.000nm	134.0°
3	235001000	3.000nm	134.0°
4	235001000	4.000nm	134.0°
5	235001000	5.000nm	134.0°
6	235001000	6.000nm	134.0°
7	235001000	7.000nm	134.0°
8	235001000	8.000nm	134.0°
9	235001000	9.000nm	134.0°
10	235001000	10.000nm	134.0°
11	235001000	11.000nm	134.0°
12	235001000	12.000nm	134.0°
13	235001000	13.000nm	134.0°
14	235001000	14.000nm	134.0°
15	235001000	15.000nm	134.0°
16	235001000	16.000nm	134.0°
17	235001000	17.000nm	134.0°
18	235001000	18.000nm	134.0°
19	235001000	19.000nm	134.0°
20	235001000	20.000nm	134.0°
21	235001000	21.000nm	134.0°
22	235001000	22.000nm	134.0°
23	235001000	23.000nm	134.0°
24	235001000	24.000nm	134.0°
25	235001000	25.000nm	134.0°
26	235001000	26.000nm	134.0°
27	235001000	27.000nm	134.0°
28	235001000	28.000nm	134.0°
29	235001000	29.000nm	134.0°
30	235001000	30.000nm	134.0°
31	235001000	31.000nm	134.0°
32	235001000	32.000nm	134.0°
33	235001000	33.000nm	134.0°
34	235001000	34.000nm	134.0°
35	235001000	35.000nm	134.0°
36	235001000	36.000nm	134.0°
37	235001000	37.000nm	134.0°
38	235001000	38.000nm	134.0°
39	235001000	39.000nm	134.0°
40	235001000	40.000nm	134.0°
41	235001000	41.000nm	134.0°
42	235001000	42.000nm	134.0°
43	235001000	43.000nm	134.0°
44	235001000	44.000nm	134.0°
45	235001000	45.000nm	134.0°
46	235001000	46.000nm	134.0°
47	235001000	47.000nm	134.0°
48	235001000	48.000nm	134.0°
49	235001000	49.000nm	134.0°
50	235001000	50.000nm	134.0°
51	235001000	51.000nm	134.0°
52	235001000	52.000nm	134.0°
53	235001000	53.000nm	134.0°
54	235001000	54.000nm	134.0°
55	235001000	55.000nm	134.0°
56	235001000	56.000nm	134.0°
57	235001000	57.000nm	134.0°
58	235001000	58.000nm	134.0°
59	235001000	59.000nm	134.0°
60	235001000	60.000nm	134.0°
61	235001000	61.000nm	134.0°
62	235001000	62.000nm	134.0°
63	235001000	63.000nm	134.0°
64	235001000	64.000nm	134.0°
65	235001000	65.000nm	134.0°
66	235001000	66.000nm	134.0°
67	235001000	67.000nm	134.0°
68	235001000	68.000nm	134.0°
69	235001000	69.000nm	134.0°
70	235001000	70.000nm	134.0°
71	235001000	71.000nm	134.0°
72	235001000	72.000nm	134.0°
73	235001000	73.000nm	134.0°
74	235001000	74.000nm	134.0°
75	235001000	75.000nm	134.0°
76	235001000	76.000nm	134.0°
77	235001000	77.000nm	134.0°
78	235001000	78.000nm	134.0°
79	235001000	79.000nm	134.0°
80	235001000	80.000nm	134.0°
81	235001000	81.000nm	134.0°
82	235001000	82.000nm	134.0°
83	235001000	83.000nm	134.0°
84	235001000	84.000nm	134.0°
85	235001000	85.000nm	134.0°
86	235001000	86.000nm	134.0°
87	235001000	87.000nm	134.0°
88	235001000	88.000nm	134.0°
89	235001000	89.000nm	134.0°
90	235001000	90.000nm	134.0°
91	235001000	91.000nm	134.0°
92	235001000	92.000nm	134.0°
93	235001000	93.000nm	134.0°
94	235001000	94.000nm	134.0°
95	235001000	95.000nm	134.0°
96	235001000	96.000nm	134.0°
97	235001000	97.000nm	134.0°
98	235001000	98.000nm	134.0°
99	235001000	99.000nm	134.0°
100	235001000	100.000nm	134.0°



Basic Target Graphic

In radar and chart modes, view basic AIS target information, such as heading, range and estimated time of arrival as well as a target arrow.

AIS SPECIFICATIONS

AIS350 AND AIS650

Operating voltage: 9.6v to 31.2v DC (rated supply -20%, +30%)

Peak current in normal operation: <200mA

Average power consumption: <2W

Number of receivers: 2

Number of transmitters: 1 (AIS650 only)

Receiver band 1: 161.975 MHz fixed channel

Receiver band 2: 162.025 MHz fixed channel

Receiver sensitivity: -107 dBm

Dimensions: 167 x 54 x 99.5mm (W x H x D)

Operation temperature range: -15°C to +55°C (5°F to 131°F)

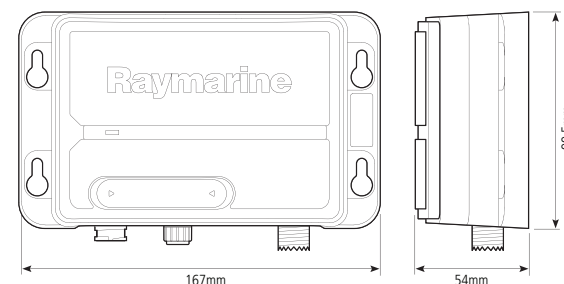
ORDERING INFORMATION

E32158 AIS650 Class B Transceiver

E32157 AIS350 Dual-Channel Receiver

Further Information:

For more AIS650 and AIS350 product information, please go to our website www.raymarine.com or visit your nearest Raymarine stockist.



RAYMARINE VHF COMMUNICATIONS. PEACE OF MIND IS CLOSE AT HAND.

Raymarine's communications systems combine innovative, state-of-the-art technology with rugged waterproof construction, designed to withstand life at sea. Select the right radio for your boat – single or multi-station VHF's, Class D DSC (Digital Selective Calling) with SeaTalk and NMEA connectivity. Whether blue water cruising or fishing inshore, Raymarine has what you need for communication safety at sea.

What is Digital Selective Calling? Digital Selective Calling (DSC) is a global protocol that uses channel 70 (156.525 MHz) to transmit and receive digital messages. It works on DSC equipped VHF radios and is used for individual, 'all ships' and distress calls. DSC also enables you to selectively alert single or multiple boaters of incoming VHF calls by using stored MMSI (Maritime Mobile Service Identification) numbers, similar to making a phone call.

You can also 'poll' another boat to obtain its GPS position and display it on a Raymarine multifunction display.

DSC safety digital Mayday. If you are unfortunate enough to find yourself having to make a mayday call, the last thing you need is extra complication. Making a DSC distress call is simple with Raymarine's DSC equipped VHF's. Just press the button, clearly marked in the back of the handset or front panel of the radio, and GPS position and time information are transmitted in a digital 'packet' complete with the vessel's Maritime Mobile Service Identification (MMSI) telling other ships and shore stations exactly where you are and that you are in a distress situation. This simple procedure can dramatically increase your chance of a successful rescue compared to a traditional Mayday voice call.





RAY218E

Fixed mount: Ray218E high performance VHF

The Ray218E is Raymarine's premier fixed mount VHF radio with a long list of standard features. The Ray218E can be expanded with the optional Raymic remote handset that offers full function radio control and intercom from a remote on board station.

RAYMIC

Optional handset for Ray218E and Ray55E VHF radios

Provides a complete hand-held, full-function, second station or an intercom handset.



RAY55E

Fixed mount: Ray55E full featured compact VHF

A compact powerhouse, the Ray55E VHF radio offers performance and style. Expand the Ray55E with the powerful Raymic remote handset.



RAY49E

Fixed mount: Ray49E ultra compact VHF

The Ray49E VHF is our most compact fixed mount DSC VHF radio. Ideal for smaller boats, the Ray49E features crystal clear audio and remote microphone controls.

RAY240E

Modular: Ray240E Class D DSC VHF Radio

The modular Ray240E consists of a receiver / transmitter module and a waterproof cell phone style handset and remote speaker. There's an optional hailer horn with manual and automatic fog signals for vessels underway, at anchor and more. It can also be expanded with a second handset and speaker.

FEATURES	RAY240E	RAY218E	RAY55E	RAY49E
Class D DSC (Digital Selective Calling) transceiver	●	●	●	●
'DSE' NMEA sentence for 3 decimal position precision	●	●	●	●
DSC Distress key transmits GPS position and a digital mayday	●	●	●	●
Dual and Tri Watch	●	●	●	●
Built-in Hailer with "Listen Back" capability and automatic fog horn	22 Watt	30 Watt		
NMEA 0183 input with GPS Position, COG and SOG display	No SOG or COG	●	●	●
Chartplotter position polling using NMEA 0183 output	●	●	●	●
Easy-to-use rotary controls for channel, volume, squelch and menu operation		●	●	●
Extra large dot matrix LCD	●	●	●	Segmented LCD
Speaker microphone with controls and remote mount option		●	●	
Dual Channel Display (2UP Mode) displays active channel and standby channel		●	●	
Programmable favorite channel soft keys (1UP Mode)		●	●	
Quick Access 16/Plus Key	●	●	●	●
4 Scan modes: All scan, saved (memory) scan, priority all scan and priority saved scan	●	●	●	●
Programmable Scanning	●	●	●	●
Submersible (IPX7 Standard)	●	●	●	●
Superior receiver with excellent intermodulation rejection		●	●	
Rugged housing with a low profile bezel using the optional flush mount kit		●	●	●
Optional Raymic remote station handset serves as full function second station		●	●	
External speaker output	●	●	●	●
NMEA 0183 input	●	●	●	●
Powered Loudspeaker with On/Off Switch	●			
Phone style handset with alphanumeric keypad	●			
Second station option	●	RayMic	RayMic	
ATIS (optional)	●	●	●	●



RAY430 Loudhailer

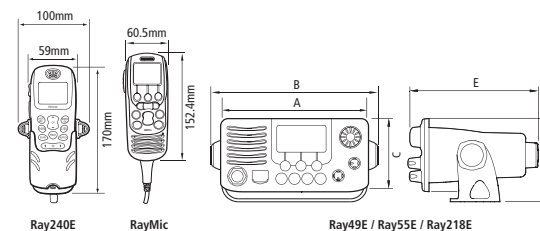
Ahoy there! The Ray430 loudhailer has eight foghorn signals, including an automatic foghorn when underway. Connect it to a vessel security system for an extra loud alarm siren if a sensor is activated, or add up to four remote intercom stations for complete onboard communications. 30 watts of output power means you will be loud and clear!

SPECIFICATIONS

Please refer to the table (left) and the multi-product dimensional diagram at the bottom of this table.

ORDERING INFORMATION

E42001	Ray240 (US)
E42002	Ray240E (Europe/RoW)
E42002-UK	Ray240E (UK)
E42002-DE	Ray240E (Germany)
E42002-DK	Ray240E (Denmark)
E45002	Ray240E (Europe) second station
E45003	Ray240E active loudspeaker
E43032	Ray218 (US)
E43033	Ray218E (Europe/RoW)
E43033-UK	Ray218E (UK)
E43033-DE	Ray218E (Germany)
E43033-DK	Ray218E (Denmark)
E43034	Ray49 (US)
E43035	Ray49E (Europe/RoW)
E43035-UK	Ray49E (UK)
E43035-DE	Ray49E (Germany)
E43035-DK	Ray49E (Denmark)
E43036	Ray55 (US)
E43037	Ray55E (Europe/RoW)
E43037-UK	Ray55E (UK)
E43037-DE	Ray55E (Germany)
E43037-DK	Ray55E (Denmark)
A46052	RayMic second station (10m cable)
M95997A	Ray430 Loudhailer – no hailing horn
M95435	Hailing horn speaker
M95998	Intercom speaker

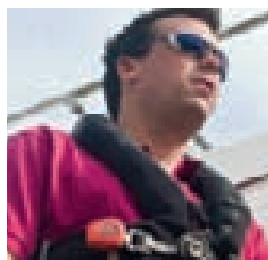


Dimensions (mm)					
	A	B	C	D	E
Ray218E	198	225.5	97.5	112.5	179.3
Ray49E	167	179	73	90.3	175
Ray55E	172.3	191	80	93.8	174

Note: Information displayed on the product screens is a graphical representation of VHF data. Therefore, live VHF radio data may vary from the images you see on these pages.



LIFETAG PERSONAL MAN OVERBOARD SYSTEM



LifeTag is a personal man overboard (MOB) system that consists of a base station and wireless tags worn by crew members, family or pets. LifeTag can be used as a standalone system or integrated into a Raymarine SeaTalk network.

If a crew member falls overboard, or strays out of range – typically 9m (30') – contact with the base-station is lost and an alarm sounds.

If you have a Raymarine SeaTalk network equipped with Raymarine multifunction displays or i70, ST60+ Graphic or ST70+ instruments, an emergency Man Over Board alarm will be activated on the multifunction displays and instruments. In addition, the multifunction

display will show an emergency waypoint (MOB) with co-ordinates and bearing to that emergency waypoint.

If the SeaTalk network contains an i70 or an ST60+ Graphic, then this too will automatically display the co-ordinates and bearing. This information can then be used to navigate back to the position where the MOB alarm was activated.

General Features

- Basic system includes 2 LifeTags and a base station.
- System can be expanded (extra LifeTags sold separately) to monitor up to 16 LifeTags. Larger boats may be covered by an additional base station (max. of 2 base stations).
- Supplied velcro strap enables LifeTags to be fitted around the wrist of an adult or child, an article of clothing, belt loop or a pet's collar.
- LED for status feedback.

SPECIFICATIONS

TAG

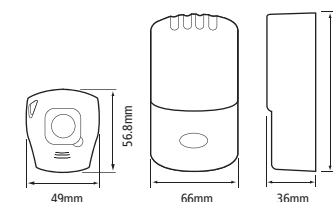
Power: Non-rechargeable CR2 3V lithium battery
Transmitted power: 1mW
Dimensions: 49 x 56.8 x 24.4mm (W x H x D)
Max number tags: 16 per system

BASE STATION

Power: 8–16V DC external supply
Base station range: Typically 9m (30') from base station to tag
Dimensions: 66 x 118 x 36 (W x H x D)

ORDERING INFORMATION

E12185 LifeTag system: 2 LifeTags, base station and alarm
E15026 Additional LifeTag
E18030 LifeTag base station



- Replaceable CR2 Lithium batteries supplied – expected battery life is one year (with over 2000 operational hours).

LifeTag Base Station Features

- Handles communication with each LifeTag.
- Outputs for external alarm siren.
- Secondary output for activating other systems.
- 12V DC power or can be powered by SeaTalk network.

LifeTag Alarm

- Extra loud alarm sound.
- Simple two wire connection to base station.

LifeTag System Warning:

NOTE: The Raymarine LifeTag system is an aid to crew safety, and is an enhancement only of a vessel's main crew safety system. It is the responsibility of the captain and all crew members to ensure that all safety instructions and procedures are in place and obeyed with local requirements. Failure to operate this system in accordance with the operating instructions may result in unreliable or reduced system performance.



ST70+. FOR THE BIGGER PICTURE

The ST70+ instrument display is designed primarily for sail and powerboats over 12m (40') and is the perfect partner for Raymarine multifunction display systems. The large, high visibility, 165mm (6.5") LCDs are ideal for installations where information is viewed at a distance or you simply want a larger format display.

ST70+ is fully customisable, allowing you to view information when you want it and where you want it, be it in digital or analogue format, full screen or in user defined windows selected from any of 17 configurations.

PHOTO: JEANNEAU (BENETEAU GROUP)



General features

- Large 6.5" (165mm) VGA colour LCD display.
- Wide viewing angle for superb visibility.
- Sunlight viewable display.
- 4:3 Screen format (640 x 480 pixels).
- SeaTalk^{ng} and SeaTalk connectivity.
- Button-less displays operated by dedicated keypads.
- Surface mount, flush mount or rear panel mount installation options
- Choice of 5 colour palettes, including red on black for night vision and inverse white on black for enhanced clarity in bright conditions.
- Fully waterproof to IPX6 standard.
- High quality graphics.
- User defined instrument data pages.
- 17 screen template/layout options.
- Each page can be customised and turned on/off as required.
- Language options. UK English; US English; French; German; Danish; Dutch; Spanish; Italian; Norwegian; Finnish; Swedish; Portuguese; Russian; Chinese; Japanese; Korean and Greek.
- ST70+ screen can be configured as an instrument or an autopilot display (at set-up).
- Intuitive operating menu and functionality with large bright icons.
- Data categories include: Speed; Wind; Fuel (via NMEA 2000); Battery; Engine (via NMEA 2000); Environmental; GPS; Distance and Time; Depth; Navigation; Pilot Mode and Heading.



Power Pilot Keypad

The power pilot keypad is designed specifically for powerboats.

- Dedicated buttons engage and disengage the autopilot.
- Unicontrol allows you to change course.
- Dodge button for use with an SPX autopilot.

Sail Pilot Keypad

Designed specifically for sail boats.

- Dedicated buttons to engage and disengage the autopilot, perform a dodge manoeuvre and track to a waypoint.
- Course adjustments are made using the port and starboard -1, +1, -10 and +10 keys.

Instrument Keypad

The instrument keypad controls all the instrument functions via a series of push buttons and a multifunction 'Unicontrol' interface.

**Optional Bezel**

Silver bezel available to match finish of E Series HybridTouch Displays.

Power Pilot Keypad

Instrument Keypad

Sail Pilot Keypad

ST70+ SPECIFICATIONS

Voltage range: 10 –16 V DC

Power consumption: 700mA (max)

Keypad dimensions: 136 x 92 x 56mm (power and instrument); 136 x 92 x 42mm (sail) (WxHxD)

Weight kg (lbs): Display 0.9 (1.98), keypads 0.3 (0.66)

Mounting method: Low profile flush or surface mount (fully sealed behind panel mount)

Control type: Dedicated keypads

Display: 165 mm (6.5") sunlight viewable VGA (640x480 pixels)

Colour palettes: 5, including inverse video (white text with black background) night mode (red text with black background)

Display lighting: White LED, sliding scale

Connectors: 2 SeaTalk^{ng} connectors, 1 power connector

Interfaces: SeaTalk^{ng}, SeaTalkⁱ, NMEA 2000

Languages: 18 (see page 77)

Instrument page options: 8

Page layout options: 17

ORDERING INFORMATION

E22115 ST70+ Multifunction Display

E22116 ST70+ Instrument Keypad

E22117 ST70+ Sail Keypad

E22118 ST70+ Power Pilot Keypad

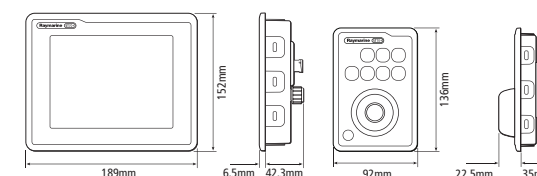




PHOTO: SUNSEEKER INTERNATIONAL

ST60+ INSTRUMENTS. THE CHOICE AROUND THE GLOBE.

ST60+ offers everything from stand-alone display units to sophisticated, fully-integrated systems. Excellent viewing angles for both day and night conditions and simple, push-button controls make ST60+ instruments extremely easy to see and use.

- Speed Over Ground (SOG) on Speed and Tridata.
- Automatic switching of depth sensors when used with depth sounder modules to eliminate interference.
- 'Soft' power down.

**ST60+ Wind**

- Analogue and digital data.
- Calculates apparent (relative) and true wind speed/angle (true wind requires SeaTalk speed through water data).

ST60+ Rudder

- ST60+ analogue rudder display available with rudder transducer.
- Or used as a repeater for a Raymarine SeaTalk autopilot.

ST60+ Close Hauled Wind

Magnified 20° – 60° display for when a single degree can make all the difference.

ST60+ Graphic Repeater

Displays all ST60+ data on SeaTalk in graphic and multi-line formats.

ST60+ Speed

- Displays speed through water, speed over ground (GPS required).
- Sea surface temperature, trip and log data.

ST60+ Tridata

- Combines depth and speed data in an easy-to-read 3-line display.
- Dedicated depth and speed displays with trip/log, sea temperature and SOG.

ST60+ Depth

- Large digits plus depth trend indicator.
- Min/max depth.
- Audible shallow, anchor and deep water alarms.

ST60+ Compass

- Dedicated analogue/digital display.
- Patented fluxgate transducer.
- Lock heading/steer to feature.

**Wind Transducers**

Raymarine wind transducers offer low start-up speeds, smooth operation and great accuracy. There are two designs to choose from: aluminium short arm or carbon fibre long arm.

**SmartController**

Monitor your Raymarine SeaTalk instruments with the wireless SmartController. Wireless operation means freedom to view vital information when on deck or out of sight of your instruments.

ST60+ SPECIFICATIONS

Nominal voltage: 12V DC system

Absolute voltage range: 10 – 16V DC

Power consumption: Speed, Depth, Rudder Angle and Tridata 45mA, Compass, Wind and CH Wind 65mA, Graphic 50mA

Mounting methods: flush/surface/bracket

Control type(s): 4 backlit buttons

Display size: Speed, Depth and Tridata 92mm segmented LCD; Graphic 92mm dot matrix LCD; Compass, Wind and CH Wind 34mm segmented LCD & pointer

Display lighting: 3 levels plus off

NMEA input and output (0183): via E85001 (ST60+ Graphic)

SeaTalk: 2 connections

PC (RS232) and RayTech interface option (via E85001): Yes

Alarm Output: ST60+ Graphic

ORDERING INFORMATION

A22004-P ST60+ Tridata display – digital

A22013-P ST60+ Tridata system – digital

A22017-P ST60+ Tridata repeater – digital

A22002-P ST60+ Depth display – digital

A22010-P ST60+ Depth system w/transducer – digital

A22001-P ST60+ Speed display – digital

A22009-P ST60+ Speed system w/transducer – digital

A22005-P ST60+ Wind display – analogue

A22011-P ST60+ Wind system analogue rotavector – power

A22012-P ST60+ Wind system analogue vane – power/sail

E22075-P ST60+ Graphic display

A22006-P ST60+ CH/VMG repeater display – analogue

A22007-P ST60+ Compass display – analogue

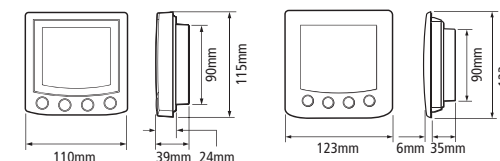
A22014-P ST60+ Compass system – analogue

A22008-P ST60+ Rudder angle indicator display – analogue

A22015-P ST60+ Rudder angle indicator system – analogue

E22078 Short arm wind transducer with 30m cable

E22079 Long arm wind transducer with 50m cable



ST40. THE BEST THINGS COME IN SMALL PACKAGES

Big displays for smaller powerboats, yachts and RIBs, these powerful SeaTalk instruments offer full integration with Raymarine autopilots and navigation equipment and can be surface or trunnion mounted.

Extra large (28mm max) digits and razor sharp LCDs – easy-to-use ST40 instruments have outstanding visibility in all lighting conditions.

ST40 Speed

Shows current, maximum and average boat speed, log, trip and sea temperature.

ST40 Bidata

Speed, depth, log and sea temperature. Two sets of data at once in large or small digits.

ST40 Compass

Displays current compass heading plus locked heading, has 'off course' alarms and can be used as a 'Man Over Board' repeater.

ST40 Depth

Crystal clear depth readout. Shallow and deep anchor alarms and minimum depth display.

ST40 Wind

Apparent wind speed and direction and true wind speed and direction. Talks to your autopilot to steer your boat to a selected apparent wind angle.



Wind Transducer

Rotavecta wind transducer for ST40 Wind system with 20m of cable.



ST40 SPECIFICATIONS

Nominal voltage: 12V DC system

Absolute voltage range: 10 – 16V DC

Power consumption (mA): Speed and Wind: 25, Compass 20; Depth 30; Bidata 35 (typical)

Mounting methods: surface or bracket

Control type(s): 3 backlit buttons

Display size and type: 88mm segmented LCD

Maximum character size: Speed, Depth Bidata 28mm; Wind and Compass 17mm

Display lighting: 3 levels plus off

NMEA input and output (0183): option via E85001

SeaTalk connection: Yes

Low power indication: Yes

Adjustable display response: Yes

System option supplied with transducer: Yes

ORDERING INFORMATION

E22043	ST40 Speed through-hull system
E22044	ST40 Depth through-hull system
E22045	ST40 Bidata system
E22047	ST40 Wind system
E22048	ST40 Compass system
E22052	ST40 Speed transom mount system
E22053	ST40 Depth transom mount system
E22054	ST40 Bidata transom mount system
E22037	ST40 Speed display only
E22038	ST40 Depth display only
E22039	ST40 Bidata display only
E22041	ST40 Wind display only
E22042	ST40 Compass display only
Z195	Rotavecta transducer with 20m cable

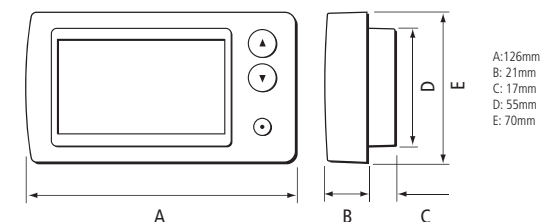




PHOTO: SPIRIT YACHT © SPIRIT YACHTS (LTD). ALL RIGHTS RESERVED

AUTOHELM AUTOPILOTS... YOUR EXPERIENCED EXTRA CREW MEMBER

From a basic tiller pilot to a powerful inboard system, each Raymarine autopilot comes with a simple, intuitive keypad and clear, functional LCD display.

So what is an autopilot? An autopilot connects to your steering system and continually corrects your boat's heading with information supplied by the compass, wind transducers or GPS/Plotter. Autopilots are designed to maintain an accurate course in various sea conditions with minimal helm movements. They can act as a spare pair of hands or an extra crew member allowing you to trim the sails or get the

fenders over the side. Because they steer so accurately, they will save fuel and get you to your destination faster, especially when connected to a chartplotter.

What does an autopilot consist of? Autopilots consist of three main components: a heading sensor (usually a compass), a course computer/processor and control head (the brains), and a drive mechanism (the business end).

Autopilot Types. There are two types of autopilot, Above Deck and Inboard (also called below decks).

(1) Above Deck. Above deck pilots are simple to install and remain in the cockpit in all types of weather.

(2) Inboard. Inboard autopilots are permanently mounted below decks and are more powerful, more reliable, steer your boat better and can be supplied with a range of autopilot controllers.

See below for a selection of raymarine autopilots. Further details on each pilot is available on the following pages.

TILLER DRIVE



TILLER DRIVE



WHEEL DRIVE – SAIL



WHEEL DRIVE – POWER



SEASTAR HYDRAULIC



HYDRAULIC DRIVE SYSTEMS



MECHANICAL DRIVE SYSTEMS



VOLVO PENTA IPS



ZF POD DRIVES



ABOVE DECK AUTOPILOT DRIVES

BELOW DECK AUTOPILOT DRIVES

TECHTIP

Raymarine autopilots work so well that it's sometimes easy to forget that they can't automatically avoid obstacles or other vessels. Keep a vigilant watch.

Remember, always take the **FULLY LADEN** displacement weight of your vessel into account, this is often 20% above the designed displacement, so don't be tempted to choose a pilot which will always be working at the limits of its design capabilities. If you choose your pilot with safety in mind, it won't struggle when the going gets tough.



PHOTO: SUNBEAM YACHTS

ST1000 & ST2000 TILLER PILOTS: REMOVABLE COCKPIT AUTOPILOTS FOR TILLER STEERED YACHTS

ST1000/ST2000

Invented by Autohelm in 1973, tiller pilots have consistently been the world's most popular pilot ever since, setting the standard for performance, reliability and ease of use. Advanced features are standard. AutoTack lets you handle the sheets while the pilot tacks the boat and AutoSeastate intelligently keeps the boat on course while conserving power.



SPECIFICATIONS

Power supply: 12V systems

Absolute voltage range: 10 – 16V DC

Power consumption: ST1000/ST2000: 40mA

SPX-5 Tiller: 250mA (standby mode)

Weight kg (lbs): 1.53 (3.4)

Mounting methods: Reversible port or starboard

Display size: 45mm segmented LCD

Display lighting: 3 levels plus off

Connections: NMEA 0183 input and SeaTalk

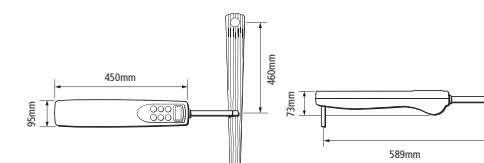
Thrust: ST1000: 57kg (125lbs) ST2000 77kg (169lbs)

Stroke: 236mm (9.3in)

Ordering Information

A12004 ST1000 Tillerpilot

A12005 ST2000 Tillerpilot



Whether used as a stand-alone pilot or with a SeaTalk/NMEA GPS, the clear backlit LCD and 6-button keypad make these pilots safe and easy to use.

	Recommended Maximum Displacement
ST1000	3,000kg (6,600lbs)
ST2000	4,500kg (10,000 lbs)



SPX-5 & SPX-5GP REMOVABLE TILLER DRIVE AUTOPILOTS

The rugged SPX-5 and SPX-5 GP Tiller Pilots are perfect for large tiller steered yachts up to 6,000kg (13,200lbs) and 7,500kg (16,000lbs) displacement respectively.

You can steer straight to a waypoint, lock on to a given wind angle, or simply set and follow a course to steer by making the most of the full SeaTalk and NMEA compatibility. The fluxgate compass is separated from the drive unit for greater accuracy and you can mount the control unit wherever it will be within easy reach for you. Used by some of the world's top single-handed sailors, Raymarine tiller pilots meet the demands of the serious sailor.

The SPX-5 Tiller Pilot is suitable for most cruising and racing scenarios, however, extended cruising or challenging racing conditions may benefit from the added ruggedness of the SPX-5 GP Tiller Pilot.

Features

- Unique tiller pilot system with a choice of full function control heads and remote mounted fluxgate compass.
- Powerful tiller drive unit is compact and unobtrusive.
- Smart Rudder Sense™ (SRS) enabled – Rudder Reference Transducer not required.

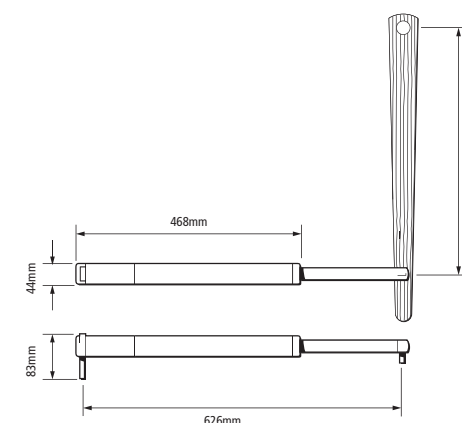
SPX-5 Tiller Pilot shown with optional p70 autopilot control head.

SPECIFICATIONS

Power supply: 12V systems
Absolute voltage range: 10 – 16V DC
Power consumption: SPX-5 Tiller: 250mA (standby mode)
Thrust: 84kg (185lbs)
Stroke: 254mm (10")
Connections: NMEA 0183 input / output (x1); SeaTalk (x2); SeaTalk^{ng} (x1); NMEA 2000 with adaptor

ORDERING INFORMATION

E12137 SPX-5 Tiller drive – no control head
E12138 SPX-5 Tiller drive GP – no control head



	Recommended Maximum Displacement*
SPX-5 Plus Tiller Pilot	6,000kg (13,200lbs)
SPX-5 GP Tiller Pilot	7,500kg (16,500 lbs)

Installation. We recommend that you consult a Raymarine approved dealer who can specify, install and commission the correct Raymarine system for your boat. An approved installation also carries our full world-wide 2 year warranty.



PHOTO: MALO YACHTS

SPX-5 WHEEL DRIVE FIXED PILOT FOR SAILBOATS

The SPX-5 wheel pilot comprises a fully enclosed wheel-drive for simple installation and superb autopilot performance. Mount the separate control unit where it is easy to reach and see. The course computer and fluxgate compass are mounted separately for optimum performance.

The rugged wheel-drive unit is available as an upgrade for existing ST4000 systems.

Installation

We recommend that you consult a Raymarine approved dealer who can specify, install and commission the correct Raymarine system for your boat. An approved installation also carries our full worldwide 2 year warranty.

SPX-5 Wheelpilot shown with optional p70 autopilot control head.

Features

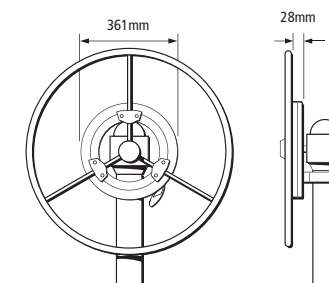
- Quick and easy installation.
- Fits most types of wheel.
- Independent display for 'best location'.
- Simple robust clutch engagement mechanism.
- Clean design.
- Smart Rudder Sense™ (SRS) enabled – Rudder Reference Transducer not required.

SPECIFICATIONS

Power supply: 12V systems
Absolute voltage range: 10 – 16V DC
Power consumption: 250mA (Standby mode)
Maximum recommended laden boat displacement: 7500kg (16,500lbs)
Revs per minute (rpm): 9
Thrust: 30Nm
Connections: NMEA 0183 input / output (x1); SeaTalk (x2); SeaTalk^{ng} (x1); NMEA 2000 with adaptor

ORDERING INFORMATION

E12133 SPX-5 SmartPilot wheel – no control head (core pack)
A18081 Drive unit



	Recommended Maximum Displacement*
SPX-5 Wheel Pilot	7,500kg (16,500 lbs)

* Important displacement information

Remember, always take the fully laden displacement weight of your vessel into account, this is often 20% above the designed displacement, so don't be tempted to choose a pilot which will always be working at the limits of its design capabilities. If you choose your pilot with safety in mind, it won't struggle when the going gets tough.



PHOTO: NIMBUS BOATS

SPX-5R HELM MOUNT FIXED PILOT

The SPX-5R pilot is a helm mounted autopilot designed for use on small sports and fishing boats typically up to 9.2m (30') in length. Suitable for use with fixed and tilt helms, the pilot consists of a drive unit that fits over your existing steering wheel shaft, a course computer with a rate gyro for precise course keeping and control head with large LCD information display.

Operation couldn't be simpler... steer onto your desired course, press the AUTO button and let go of the wheel! It really is that simple. To disengage the pilot and regain manual control, grab hold of the wheel and press the STANDBY button, you now have control. When part of a SeaTalk navigation system, the SPX-5 pilot can track to single waypoints or follow a route consisting of multiple waypoints.



SPX-5R shown with optional p70 autopilot control head.

Weights

- Mechanical steered boats – up to 4,400lbs (2,000kg).
- Hydraulic steered boats – up to 7,000lbs (3,181kg).

SPX-5R Selection Chart

	Displacement up to 4400 lbs (2,000kg)	Displacement up to 7000 lbs (3,181kg)	Typical Boat Length
RIBs (Mechanical)	●		>7.7m (25ft)
RIBs (Hydraulic)		●	>9.0m (30ft)
Outboard (Mechanical)	●		>7.7m (25ft)
Outboard (Hydraulic)		●	>9.0m (30ft)
Power Assisted		●	>10.7m (35ft)

Mechanical Constraints Information

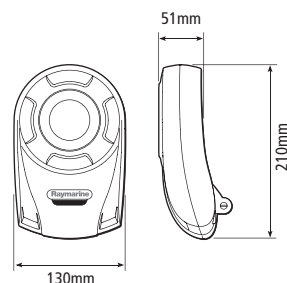
	Mechanical Restraints	
Wheel Taper Sizes	19mm (3/4")	25mm (1")
Max. Wheel Diameter	460mm (18")	
Max. Wheel Weight	1.8kg (3.96lb) mass with no one-handed wheel knobs	
Max. Wheel Torque	15Nm (11Ft lbs)	
Wheel Lock to Lock	2.5 to 5 turns	

SPX-5R SPECIFICATIONS

Power supply: 12V systems
Absolute voltage range: 10 – 16V DC
Power consumption: 250mA (Standby mode)
Thrust: 30Nm
Connections: x2 SeaTalk; x1 SeaTalk^{ng}
 1x NMEA 0183 input / output
Maximum torque: 15Nm
Maximum recommended laden boat displacement:
 Mechanical: 2000kg (4400lbs); Hydraulic: 3181kg (7000lbs)

ORDERING INFORMATION

E12220 SPX-5R Pilot
E12222 SPX-5R Pilot - no control head



SPX-5R Features

- Install the drive unit directly on to your existing steering wheel (tapered steering shaft behind the wheel).
- Smart Rudder Sense™ (SRS) enabled – Rudder Reference Transducer not required.
- Easy to install and simple to calibrate thanks to the intelligent Autolearn software that automatically learns your boat's handling characteristics.
- Rate gyro built into the course computer ensures precise course keeping.
- Ideal for trolling speed applications.

Note: Rudder reference transducer can be added to give rudder angle in auto and standby modes.

S1000 INBOARD FISHING PILOT & WIRELESS REMOTE CONTROL

The S1000 'all-in-the-box' autopilot is for powerboats with a Seastar hydraulic system or other balanced hydraulic system (see www.raymarine.com for steering system compatibility). Complete with everything needed for easy installation, the S1000 is quick to fit and simple to use. No added complications from electronic compass or rudder reference transducers – the S1000 doesn't need them.

Control the S1000 autopilot with the S100 wireless remote; simply steer on to your desired heading, press PILOT to engage the pilot in to auto and off you go. To adjust your heading at any time, simply press the port/starboard arrow keys until the heading you want is displayed. To disengage the pilot, press STANDBY – that's all there is to it!

S1000 Features

- A 'back to basics' point and shoot autopilot.
- Designed for balanced hydraulic systems.
- No electronic compass or rudder reference transducer needed.
- NMEA input from handheld or fixed GPS/Navigator/Plotter.
- Built-in fishing patterns include cloverleaf, zig-zag and circle.
- Troll speeds as low as 1 knot (subject to environmental conditions).
- Can be linked to kicker motor.
- SeaTalk GPS/Plotter compatible.



S1000 SPECIFICATIONS

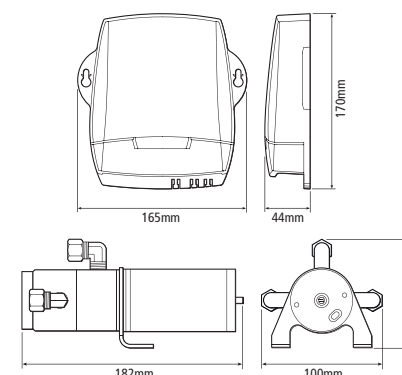
Power supply: 12V system
Absolute voltage range: 10 – 16V DC
Mounting methods: Surface
Weight kg (lbs): 0.4 (0.88)
NMEA 0183 inputs: 1
NMEA 0183 outputs: 1
SeaTalk connections: 1
RF transmitter and receiver: Yes
Drive: S1000 pump

S1000 FIT GUIDE (TYPICAL)

Vessel type and size: Up to 25'
Steering type (Seastar): Balanced hydraulic
Steering ram capacity: 80 – 200cc
Peak flow and rate: 800cc/min

ORDERING INFORMATION

E12169 S1000 Smartpilot wireless autopilot system with S100 remote control.



Fishing Patterns

The S1000 Fishing Pilot incorporates a number of dedicated fishing patterns. Patterns include: Cloverleaf, Zig Zag and Circle.

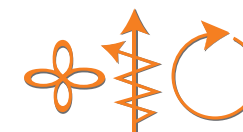




PHOTO: NORD WEST

SMARTPILOT INBOARD AUTOPILOT SYSTEMS

Next to choosing the boat itself, choosing the right autopilot can be one of the most important decisions a boat owner has to make. With a vast array of autopilot models and configurations to choose from, selecting the right autopilot can seem like a daunting task. The following pages are designed to help you choose the right Raymarine SmartPilot, system for your boat.

An inboard autopilot system consists of three elements:

Autopilot Control Head

This is the display unit you use to control your autopilot system. Raymarine offers a number of options, including multiple control heads, as well as full-function remotes and joystick controls.

Course Computer

The course computer is the central intelligence hub of the autopilot system, linking the autopilot control head to the drive unit.

Every SPX system – from the largest SPX-30 to the entry-level SPX-5 – comes with a rate gyro to provide the best possible performance.

SPX uses Advanced Steering Technology (AST), which intelligently monitors the yaw of the vessel and adapts course changes for optimum performance as well as ensuring razor-sharp course keeping.

SPX features Raymarine's proven AutoLearn function, so the pilot automatically understands the vessel's steering characteristics, simplifying calibration and allowing the vessel to constantly adapt to changing sea conditions.

Smart Rudder Sense™

SPX is enabled with Smart Rudder Sense™ technology allowing precise steering without the use of a rudder feedback sensor. This innovative feature is ideal for outboard engines and installations that can not fit a rudder sensor.

Drive Unit

The drive unit is the part that interfaces with your vessel's steering system to keep you on the right course. Raymarine has a broad range of drive units to match almost any type of steering system.

Over the next few pages, we'll explain the factors to consider when choosing each of these parts of your system.

STEP 1.0...

Drive Unit Selection

Know your boat and your steering system

The first step in selecting a Raymarine autopilot is to choose the proper autopilot drive unit for your vessel. Raymarine autopilot drive units are available in an array of sizes and configurations to accommodate various steering types and vessel displacements.

What type of steering system do you have?

To select an autopilot correctly, you will need to find out what type of steering system is installed on your vessel. This may involve opening a few hatches and looking at the gear, or this can be a simple case of consulting your boat dealer or steering manufacturer.

Raymarine SmartPilot systems accommodate hydraulic, mechanical and power assisted stern drive systems. If you are not sure how to determine what type of steering system is installed on your vessel, please consult an authorised Raymarine dealer. Raymarine dealers are very knowledgeable with a wealth of experience and have been Raymarine trained to evaluate your boat and assist you in selecting the right autopilot.

STEP 1.1...

Hydraulic Steering Systems

Raymarine SmartPilots connect to hydraulic steering systems using a rugged hydraulic pump matched to the capacity of the hydraulic steering system. To match a Raymarine SmartPilot hydraulic pump to your vessel you need to know the size (in cc) of the hydraulic cylinder ram(s) that is mounted to the rudder on inboard engined boats, or mounted to the drive unit on outboard engined boats. Your steering system documentation will have this information. Alternatively, you can look on the cylinder ram itself for the brand and model number. Once you know the model number, visit our website (www.raymarine.com) and access our hydraulic cylinder ram cross-reference guide to determine which hydraulic autopilot pump is compatible with your vessel's hydraulic steering system.

Raymarine autopilot hydraulic pumps are available in several sizes to accommodate the broad range of steering cylinder capacities. The table below shows the capacity of each Raymarine hydraulic autopilot pump when used with the corresponding SmartPilot course computers.

HYDRAULIC STEERING SYSTEMS				
DRIVE TYPE	TYPE 0.5	TYPE 1	TYPE 2	TYPE 3
Vessel displacement	Not applicable for hydraulic steering as the drive unit is matched to the ram capacity of the steering system			
Ram capacity	50–110cc	80–230cc	230–350cc	350–500cc
Maximum stall pressure at 12V	50 bar	50 bar	100 bar	80 bar
Peak flow rate (no load)	650 cc/min	1000cc/min	2000cc/min	2900cc/min
Voltage	12V	12/24V	12/24V	12/24V
Course computer used	SPX-10	SPX-10	SPX-30	SPX-30

- In some systems with dual steering rams in parallel, cylinder capacity is the total of both rams. Rams in series only require single capacity valve. Hydraulic steering systems with steering rams over 500cc require our larger constant running hydraulic pump used in conjunction with SPX and SPX-SOL course computers – contact Raymarine for details.
- An authorised Raymarine dealer is best suited to installing a hydraulic autopilot system.
- Type 0.5 suitable for Volvo D4 / D6 Sterndrive applications.



Installation

We recommend that you consult a Raymarine approved dealer who can specify, install and commission the correct Raymarine system for your boat. An approved installation also carries our full worldwide 2 year warranty.



Constant running pump

For information on Constant Running Pump usage, please contact the Raymarine product support department.

HYDRAULIC STEERING SYSTEM ORDERING INFORMATION

M81120 Type 1 (12V)

M81119 Type 1 (24V)

M81121 Type 2 (12V)

M81123 Type 2 (24V)

M81122 Type 3 (12V)

M81124 Type 3 (24V)

E12139 0.5 Litre pump (12V)

E12171 Constant running pump (12V)

E12172 Constant running pump (24V)



PHOTO: JOE MCCARTHY

STEP 1.2: MECHANICAL STEERING SYSTEMS

When selecting an autopilot drive unit for a mechanical steering system, the vessel displacement is the determining factor for selecting the correct drive.

When determining your vessel displacement, always add 20% to the displacement of your vessel to account for the added weight of fuel, gear, provisions and people.

Raymarine SmartPilot drive units for mechanical steering systems are available in linear, hydraulic linear and rotary configurations.



Mechanical linear drives. Our most commonly used drive types for sailing vessels. Raymarine mechanical linear drives provide powerful thrust, fast hard-over times and quiet operation. Mounted below decks, the linear drive moves the rudder directly by pushing the tiller arm or a rudder quadrant.

MECHANICAL LINEAR DRIVES			
DRIVE TYPE	TYPE 1	TYPE 2 SHORT	TYPE 2 LONG
Maximum boat displacement	11,000 kg (24,000 lb)	15,000 kg (33,000 lb)	20,000 kg (44,000 lb)
Peak thrust	295 kg (650 lb)	480 kg (1,050 lb)	480 kg (1,050 lb)
Maximum stroke	300 mm (12")	300 mm (12")	400 mm (16")
Hard over to hard over times (+/- 35°, no load)	11 seconds	11 seconds	14 seconds
Maximum rudder torque	735 nm (6,500 lb.in)	1,190 nm (10,500 lb.in)	1,660 nm (14,700 lb.in)
Power consumption	18–36 W	48–72 W	48–72 W
Corepack used	SPX-10	SPX-30	SPX-30

- A linear drive unit connects to the rudder stock via an independent tiller arm. Accessory fittings from your steering system manufacturer may be required.
- An authorised Raymarine dealer is best suited for installing a linear drive system.
- Must be able to back-drive steering system from the rudder.



Mechanical rotary drives. The rotary drive is designed for power and sailboat systems that can be driven from the helm position through a chain and sprocket (e.g. cable and rod steering systems). The outstanding design of the Raymarine rotary drive unit provides smooth, powerful autopilot controlled steering with quiet operation. Use the table below to select a rotary drive suitable for your vessel displacement.

MECHANICAL ROTARY DRIVES		
DRIVE TYPE	TYPE 1	TYPE 2
Maximum boat displacement	11,000 kg	20,000 kg
Peak output torque	20 nm	34 nm
Maximum shaft speed	33 rpm	33 rpm
Recommended hard-over times (no load)	10 seconds	10 seconds
Power consumption	24–48 W	60–84 W
Corepack used	SPX-10	SPX-30

- Optional drive sprockets and modification to the steering chain may be required.
- An authorised Raymarine dealer is best suited for installing a linear drive system.



Universal stern drive. The universal stern drive is for use with inboard/outboard (I/O) vessels with power assisted steering.



Hydraulic linear drives. Designed for larger mechanically steered vessels over 20,000 kg, our hydraulic linear drives are self-contained hydraulic steering systems consisting of a reversing pump, reservoir and hydraulic ram.

UNIVERSAL STERN DRIVE	
Maximum boat displacement	Does not apply
Drive method	Electromechanical
Maximum thrust	50kg
Recommended hard-over times	8.8 seconds
Maximum stroke	214mm
Corepack used	SPX-10

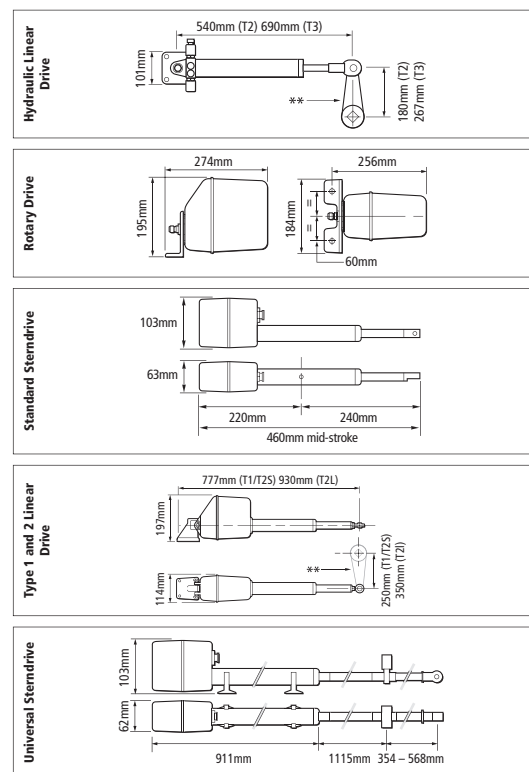
- Always verify compatibility before installing a drive unit by consulting an authorised Raymarine dealer or Raymarine's Customer Support team.
- Drive compatible with 1997 or later Mercruiser power assist inboard/outboard drives and Volvo Penta.
- Vessels with 12V systems only.
- An authorised Raymarine dealer is best suited for installing a linear drive system.
- Compatible with Volvo Penta and Mercruiser I/O drive engines – see dealer for bracket options with standard I/O drive.

HYDRAULIC LINEAR DRIVES		
Drive Type	TYPE 2	TYPE 3
Maximum boat displacement	22,000 kg	35,000 kg
Peak thrust	585 kg	1,200 kg
Maximum stroke	254 mm	300 mm
Hard-over to hard-over times	10 seconds	10 seconds
Maximum rudder torque	1,270 mm	3,200 mm
Corepack used	SPX-30	SPX-30

- A hydraulic linear drive unit connects to the rudder stock via an independent tiller arm. Accessory fittings from your steering system manufacturer may be required.
- An authorised Raymarine dealer is best suited for installing a linear drive system.
- Must be able to back drive steering system for the rudder.

ORDERING INFORMATION

- E12207** Type 2 Hydraulic Linear (12V)
- E12208** Type 2 Hydraulic Linear (24V)
- M81202** Type 3 Hydraulic Linear (12V)
- M81203** Type 3 Hydraulic Linear (24V)
- M81138** Standard Sterndrive
- E12026** Universal Sterndrive
- M81130** Type 1 Linear Drive 12V
- M81131** Type 2S Linear Drive (Short) 12V
- M81132** Type 2L Linear Drive (Long) 12V
- M81133** Type 2S Linear Drive (Short) 24V
- M81134** Type 2L Linear Drive (Long) 24V
- M81135** Type 1 12V Rotary Drive
- M81136** Type 2 12V Rotary Drive
- M81137** Type 2 24V Rotary Drive



STEP 2: YOUR COURSE COMPUTER

Having selected the correct drive unit, this defines which corepack, including the course computer is suitable for your boat. SmartPilot course computers use Raymarine's Advanced Steering Technology (AST).



SPX COURSE COMPUTERS

CORE PACKS	SPX-5	SPX-10	SPX-30	SPX-SOL	SPX-CAN	SPX-40	SPX-D10
Compatible drive types	Sp/Wh/Ti	1	1/2/3	Solenoid	Volvo Penta IPS	ZF-POD Power	ZF SailDrive
Supply voltage – volts	12	12/24	12/24	12/24	12/24	12/24	12/24
Absolute voltage range – volts DC	10.5 – 16	10.5 – 32	10.5 – 32	10.5 – 32	10.5 – 32	10.5 – 32	10.5 – 32
Motor drive current continuous (peak) – Amps	5 (10)	10 (25)	30 (50)	(5)			30 (50)
Weight kg (lbs)	2.2 (4.85)	2.2 (4.85)	2.2 (4.85)	2.2 (4.85)	2.2 (4.85)	2.2 (4.85)	2.2 (4.85)
Mounting method	Bulkhead	Bulkhead	Bulkhead	Bulkhead	Bulkhead	Bulkhead	Bulkhead
Clutch current – Amps		1.2	3	3			3
SeaTalk current	2	2	3	3	3	3	3
NMEA 0183/2000	●	●	●	●	●	●	SeaTalk ^{ng} only
Fishing Patterns (via ST70+ and p70/p70R)	●	●	●	●	●	●	●
Built-in rate gyro	●	●	●	●	●	●	●
Advanced steering technology (AST) with AutoLearn	●	●	●	●	●	●	●
Rudder reference less	●	●	●*				No
Fast heading data output: NMEA 0183 – 5Kz, SeaTalk ^{ng} – 10Hz	5/10 Hz	5/10 Hz	5/10 Hz	5/10 Hz	5/10 Hz	5/10 Hz	SeaTalk ^{ng} 10Hz
External compass standard in corepack	●	●	●	●	●	●	●
Fluxgate compass, rudder position sensor inputs	●	●	●	●			
Digital I/O port							●
NMEA 0183, SeaTalk, SeaTalk ^{ng} and power sleep switch inputs	●	●	●	●	●	●	
CAN command acknowledge input					●	●	
NMEA 0183, SeaTalk and SeaTalk ^{ng} outputs	●	●	●	●	●	●	
Driver motor output	●	●	●				
Drive clutch/Bypass valve outputs		●	●	●			
Bypass valve and solenoid drive outputs				●			
Remote control option	●	●	●	●	●	●	●
Multiple control displays	●	●	●	●	●	●	●
External alarm via E85001	●	●	●	●	●	●	●
Part number	R18151	E12198	E12199	E12205	E12200	E12118	E12195

Sp = Sport drive Wh = Wheel drive Ti = Tiller drive

* Supplied with rudder reference transducer for enhanced performance and display of rudder angle in standby.

SPX with Advanced Steering Technology (AST)

SPX pilots built-in Rate Gyro brings autopilot performance to a new level. The Rate Gyro enables Raymarine's Advanced Steering Technology (AST) software to intelligently monitor the yaw of the vessel and adapts course changes for optimum performance. A specially developed course control algorithm then delivers razor sharp course keeping without instability or overshoot. This gyro enhanced autopilot performance and advanced software is especially valuable in difficult steering situations, such as downwind with a following sea. Raymarine's AST software also enables SPX pilots to 'AutoLearn' the vessels steering characteristics, simplifying calibration and allowing the autopilot to constantly 'adapt' to changing sea conditions.



SPX Autopilots

Easy to install and service, fuel efficient, energy efficient, accurate tracking and accurate steering.

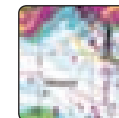
Course computer features

- SeaTalk networking – SeaTalk and SeaTalk^{ng}.
- Speed connectors for wiring.
- Simple installation – fixes with two screws.
- Connects to p70/p70R, ST6002 control heads, wireless remote controls and ST70+ with keypad.
- Easy access enclosure.
- Current limiting protection.
- Switchable NMEA2000 and clutch power.
- Professional fishing patterns.

SMARTPILOT SPX

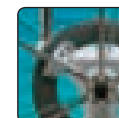
What's in the SPX core pack system

- SmartPilot SPX course computer.
- Fluxgate compass.
- Cabling.
- SPX-30, SPX-SOL and SPX-D10 pilots include Rudder Reference Transducer.



MARPA and Radar/Chart Overlay

SPX course computers also provide accurate and stable heading data for MARPA and chart overlay functions on Raymarine's multifunction displays.



Control the way the pilot steers your boat

Using sensitive response AST for the most comfortable ride or to conserve power on long sail passages.



Set your pilot up for optimum performance

Using the intelligent AutoLearn function with new control units, AST and AutoLearn software to automatically learn your boat's handling characteristics.



Dodge function

Use the dodge function to return to a heading or track after a dodge manoeuvre.



Make crosstrack error a thing of the past

Use your inboard autopilot with a Raymarine GPS to track straight to your next waypoint.



Stay right on course when the going gets tough

Using Fastrim AST to correct any changes in standing helm to keep the vessel on course (e.g. weather helm or loss of one engine).



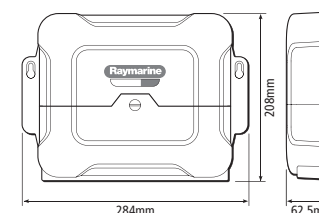
Fishing Patterns

Fishing patterns are available when used with ST70+ control and p70/p70R heads.



Wind Vane Mode

Steers to wind using wind transducer direction information.



More powerful and rugged than ever before, SmartPilot course computers serve as the central intelligence hub of our inboard pilot systems.

STEP 3: CHOOSING YOUR CONTROL HEAD

The final step to building a Raymarine SmartPilot system is selection of an autopilot control head. Here the decision is a matter of personal choice since each fixed-mount SmartPilot Control Head will offer the same level of autopilot performance. Adding additional control heads is easy thanks to Raymarine's SeaTalk networking.

CONTROL HEADS

	ST6002	p70/p70R	ST70+	S100*	SMART CONTROLLER*
Button control	•	•		•	•
Button and/or rotary control		•			
Dedicated Keypads			•		
LCD size (mm)	81	95	165	36	43
Character size (mm)	18	Variable	Variable	8	16
Customisable SeaTalk data pages	•	•	•		•
Power steer mode		p70R			
AST and AutoLearn	•	•	•	AST Only	
Optional second or multi-station control heads	•	•	•	•	•
Surface or flush mount options	•	•	•		
Cradle or belt clip mount				•	•
Full calibration	•	•	•		
Nominal voltage (system)	12V	12V	12V	12V	12V
Absolute voltage range	10 – 16V	9 – 16V	10-16V	10 – 16V	10 – 16V
Current consumption (full backlighting)	200mA	134mA	700mA		
Current consumption in standby mode (lights off)	60mA	69mA	400mA		
Display lighting levels	3 + off	variable	variable	on/off	
NMEA 0183 input/output connections	•			Base station via E85001	
SeaTalk connectivity	•	•	•	1 via base station	
SeaTalk ^{ng} , SeaTalk and NMEA 2000 connectivity		•	•		

* Must have a fixed head for calibration purposes.



ST6002 Control head

The ST6002 Control Head is perfect when space is limited, its clear LCD display with up to 15 SeaTalk data pages allows you to monitor important navigational data as well as control the autopilot.

- Compact control head.
- Easy to read high-contrast display.
- Simple setup and calibration with AutoLearn.
- Versatile data repeater with 15 configurable instrument/navigation data pages.
- Intuitive Autohelm pilot controls.
- Rudder angle indicator.
- Programmable AutoTack control.
- Surface mount (standard) or optional flush-mount fascia.
- Compatible with all SmartPilot corepacks and drive units.
- Available in convenient preconfigured SmartPilot system packs (with corepack and drive unit) for sail and power applications.



Autopilot control p70 and p70R

3.5" sunlight viewable autopilot control heads are available in push-button or rotary knob configurations and support Raymarine SPX Series core packs and features. Supported pilot modes include: auto, standby, pattern, track, wind vane, power steer (rotary version only) and jog steer.

The new autopilot control heads are available in two control styles. The p70 is a push-button operation controller designed primarily for sailboats, while the p70R with its combination of push-buttons and rotary control dial is aimed at powered craft.

- New LightHouse user interface is simple and quick to use.
- 160° viewing angles.
- Start up wizard helps you configure the pilot quickly and easily.
- Anti-reflective coating for improved visibility in bright sunlight.

- Button or rotary control options for sail and power applications.
- Low power – typically 132mA/1.6W – 27% less than previous models at x4 measured brightness.
- Supported autopilot modes: Auto; Standby; Pattern; Track; Wind Vane; Power Steer and Jog Steer
- Displays pilot information in different formats.
- Simple system and group dimming/illumination.
- Support for multiple data sources.
- SeaTalk^{ng}/NMEA2000 and SeaTalk connectivity (no bridging required)



PHOTO: SAN LORENZO

ST70+ and Pilot Keypads

The ST70+ display is designed primarily for sail and powerboats over 12m (40') and is the perfect partner for Raymarine multifunction displays.

ST70+ is fully customisable, allowing you to view information when you want it and where you want it, be it in digital or analogue format, full screen or in user defined windows.

The button-less displays are operated by dedicated keypads – there's a push-button only pilot keypad for sailboats and a rotary for powerboats.

- Simple start-up wizard quickly configures the autopilot.
- Compatible with SPX course computers.
- Choose from digital display, compass rose or 3D isometric screens.
- Capable of displaying an additional 3 boxes of instrument data.
- Multilingual.

- New simplified set-up and calibration configuration.
- Surface or flush mount.
- Can be used as a master display or a colour repeater to an existing system.
- Intuitive dodge function when connected to an SPX course computer.
- Extensive fishing patterns when connected to an SPX course computer.



S100 Wireless Control

The compact S100 gives you basic, onboard wireless control of any Raymarine SeaTalk autopilot, even if you're below deck and out of sight of your autopilot.

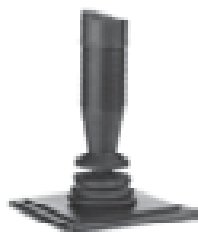
Easy operation and intuitive menu structure for easy access to all features. The S100 is powered by two AAA alkaline batteries.



SmartController

Take full, onboard control of your Raymarine SeaTalk autopilot with the wireless SmartController. Wireless operation means freedom to monitor vital information when you're on deck or out of sight of your instruments.

Lightweight and compact for easy handling, the SmartController is a breeze to use thanks to its intuitive interface.



Extra control: Joystick

Compatible with any Raymarine SmartPilot below-deck autopilot system, the SmartPilot Autopilot Joystick provides you with convenient auxiliary steering control anywhere on your boat using your autopilot's drive system. Multiple Joystick Controllers can be fitted anywhere you need to steer. Mount them at bridge-wing control stations, aft-decks or even in the arm of your Captain's chair. Easy SeaTalk network integration simplifies installation. The Raymarine SmartPilot Joystick Controller supports both proportional and bang-bang operation. Combine the Joystick Controller with an optional rudder angle instrument below for convenient full-function steering anywhere.

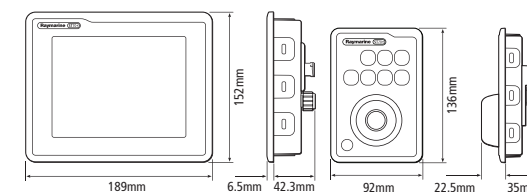
SPECIFICATIONS

Control head specifications can be found in the selection table on page 94.

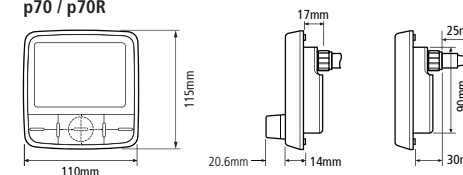
ORDERING INFORMATION

E12098-P	ST6002 control head (surface mount)
E12100-P	ST6002 control head (flush mount)
E22115	ST70+ multifunction display
E22117	ST70+ sail pilot keypad
E22118	ST70+ power pilot keypad
E12136	SeaTalk joystick
E22166	p70 Autopilot controller (button)
E22167	p70R Autopilot controller (rotary)
E15024	S100 Wireless autopilot remote with base station
E15023	SmartController wireless remote with base station

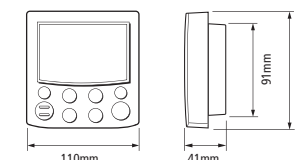
ST70+



p70 / p70R



ST6002



SPX-SOL SOLENOID INBOARD AUTOPILOT



The Raymarine SPX-SOL autopilot is compatible with solenoid drive systems and, like other SPX autopilots, offers performance enhancements with built-in AST (Advanced Steering Technology) and AutoLearn software. When used with an p70 or p70R Autopilot head, the SPX-SOL autopilot also gives you access to a wide range of fishing patterns.

Compatible with:

- Solenoid drive systems.
- Raymarine Constant Running Hydraulic Pumps (12V from 3.0 to 4.5L and 24V from 3.0 to 4.5L).
- Drives 12V or 24V by-pass valve, up to 2A current draw.
- Designed to drive 12V or 24V solenoid valves, up to 5A current draw.

SPX-CAN AUTOPILOT FOR VOLVO PENTA PROPULSION SYSTEMS

Designed to integrate with the innovative steer-by-wire IPS system the Raymarine SPX-CAN represents a milestone in the convergence of autopilot and propulsion technology. Employing Raymarine's proven AST (Advanced Steering Technology), the SPX-CAN delivers razor sharp course keeping and smooth course turns, in conjunction with the SPX-CAN 'steer by wire' propulsion system. CAN Bus communication protocols, provides the SPX-CAN with single cable interface to steer-by-wire. Raymarine's proven SeaTalk technology provides boat owners with their choice of multiple SmartPilot control heads as well as seamless integration with Raymarine's multifunction displays and instrument systems.

- Steer-By-Wire technology.
- Simplified CAN Bus autopilot interface.
- Advanced Steering Technology (Smartpilot AST).
- Compatible with Volvo Penta joystick controlled Sterndrives.

Note: Volvo Penta pilot interface required.



Volvo Penta IPS System

SPX-D10 AUTOPILOT FOR ZF SAILDRIVE SYSTEMS

The SPX-D10 is a unique pilot product, dedicated to the ZF SailDrive system. The SailDrive system is installed on sailing yachts, and when twinned with a bow thruster, provides a revolutionary manoeuvring and propulsion drive for docking, accessed via a dedicated joystick interface.

The SPX-D10 autopilot automatically centres and holds the rudder when the SailDrive is engaged to create a stable platform for 360° manoeuvring. This feature is of course in addition to the class-leading autopilot performance common to all SPX-series autopilots.

Currently the ZF SailDrive system is only available on selected Beneteau and Jeanneau boats.

Features

Features and functions are identical to the SPX-30 (see table on page 92), but with the following changes:

- Dedicated ZF SailDrive system autopilot.
- SPX-D10 system comes complete with fluxgate compass and rudder reference unit.
- Rudder reference sensor must always be fitted.



SPX-40 AUTOPILOT FOR STEER-BY-WIRE DRIVE SYSTEMS



Designed to integrate with all NMEA 2000 steer-by-wire CAN based systems the Raymarine SPX-40 represents the convergence of autopilot and propulsion technology. Employing Raymarine's proven AST (Advanced Steering Technology), the SPX-40 delivers razor sharp course keeping and smooth course turns, in conjunction with the compatible 'steer by wire' propulsion systems.

Building on the innovative technology of the SPX-CAN pilot, the SPX-40 introduces Raymarine's AST (Advanced Steering Technology) to the new ZF-Marine Steer Command system for POD and stern drive applications.

Connection is simplicity itself with the SPX-40 linking directly with the Steer Command management unit (VMU) over the CAN bus, without the need for a separate interface box.

Connection to Raymarine's class-leading multifunction displays and instruments is achieved via the proven SeaTalk technology.



SEATALK^{ng} – THE EASY WAY TO NETWORK

SeaTalk^{ng} is a robust cabling and connection system compatible with NMEA 2000, built specifically for the marine environment comprising a powered single backbone with two terminators, one at each end.

Small diameter cable connectors are used throughout the system to make installation easier. There's a wide range of cable lengths, all with over-moulded plugs, so there is no need to cut or splice cables. Spur cables connect individual SeaTalk^{ng} products to the SeaTalk^{ng} backbone.

Cables and connectors are colour-coded for easy system identification and have quick-connect (push-fit, twist-lock) waterproof (IPx6) plugs and sockets.

- Backbone cables, plugs, sockets and terminators are coded blue.
 - Spur cables, plugs, and sockets are coded white.
- SeaTalk^{ng} to SeaTalk^{ng} converter cables, plugs and sockets are coded yellow.
- SeaTalk^{ng} power cables are coded red.
- Transducer signals are easily converted to SeaTalk^{ng} with the iTC-5 component.
 - SeaTalk^{hs} data is quickly distributed to other SeaTalk^{hs} using the HS-5 switch.
 - A 3rd party product (NGT-1) is also available to convert NMEA0183 GPS data for DSC VHF use.

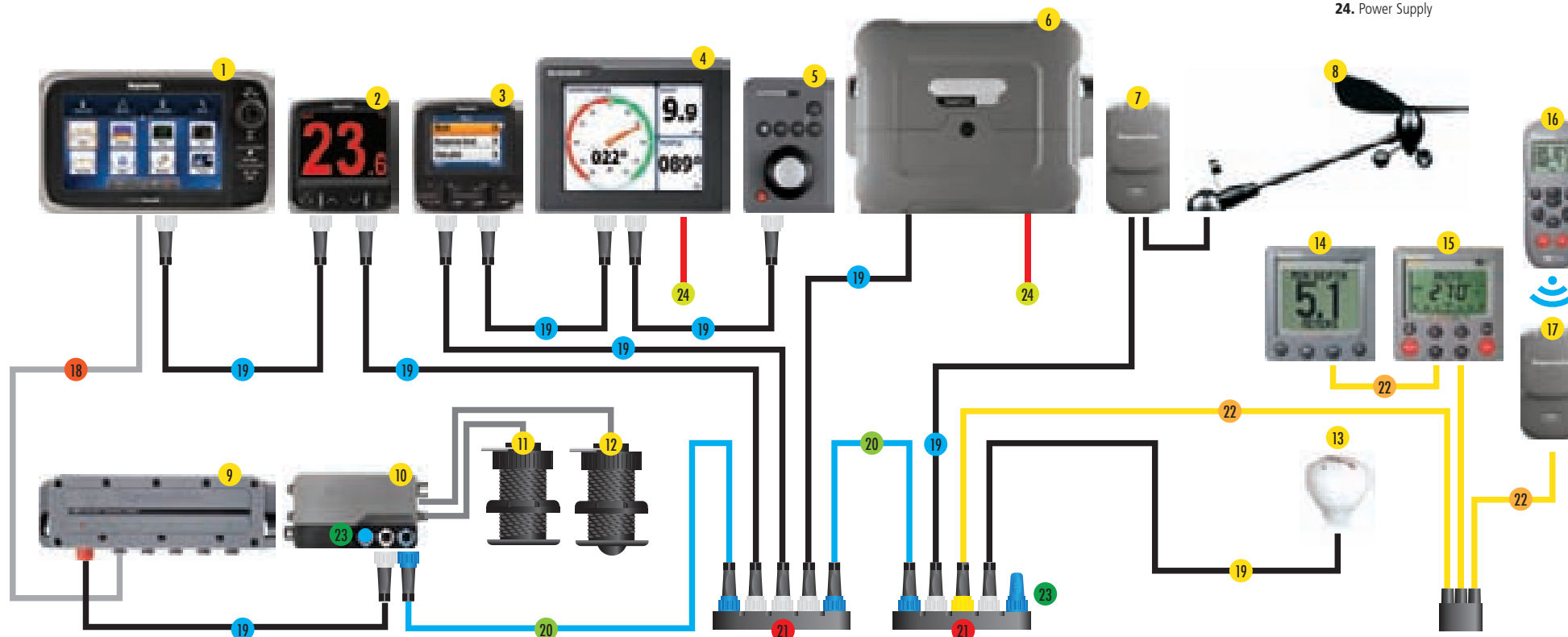
Three-way, five-way and in-line cable connection pieces aid system flexibility.

Whether you are looking to expand your current SeaTalk^{ng} system, update your electronics suite or completely refit, it couldn't be easier with SeaTalk^{ng}.



Typical Basic SeaTalk^{ng} System:

1. New e Series 2. i70 Instrument
3. p70/p70R Autopilot 4. ST70 Plus
Instrument 5. ST70 Plus Autopilot Keypad
6. SPX Course Computer 7. Pod 8. Wind
Transducer 9. Network Switch 10. iTC-5
11. Speed Transducer 12. Depth Transducer
13. RS130 GPS Sensor 14. ST60+ Instrument
15. ST6002 Autopilot 16. SmartController
17. Pod 18. RayNet Cable 19. SeaTalk^{ng} Spur
20. SeaTalk^{ng} Backbone 21. 5-Way SeaTalk^{ng}
Connector 22. SeaTalk 23. Terminator
24. Power Supply



Note: Imagery for illustrative purposes only. Product images shown in suggested system diagrams are not to scale



PHOTO: HOLTERMAN (TOP) CRANCHI (ABOVE)

PHOTO: JOE MCCARTHY



UPGRADE AND REFIT OPTIONS

Upgrading/Refitting Multifunction Displays

Looking to refit your boat or upgrade your current Raymarine displays to the **new e or c Series displays**? We can help make life easier for you!

Optional easy-fit bezels are available, complete with mounting plates, for use when replacing C/E 80/120 Classic or C/E 90/120 Widescreen displays, so there is no need to cut new holes or fit a new dash.

Upgrading is Simple

1. Remove your old Raymarine display from the dash.
2. Screw the mounting plate (supplied pre-drilled) to the old fixing holes.
3. Remove the bezel from your **new e or c Series display**.
4. Fit the NEW display into the mounting plate and screw down.
5. Clip the new bezel on to the new display.
6. Stand back and admire your handiwork!

Optional easy-fit bezels available to upgrade from C90W, C120W, E90W and E120W

Optional easy-fit bezels available to upgrade from C/E 80 and C/E 120 Classic



Upgrading/Refitting Instruments

To complete the look, you will find that the stunning **new i70, p70 and p70R pilot heads** fit neatly into the same space and cutout as ST60 and ST60+ instruments. With SeaTalk^{ng} it's easy to connect to the SeaTalk^{ng} backbone or direct to an existing SeaTalk system – your new instruments will be up-and-running in no time!



RS130 External GPS Sensor

Nominal supply voltage: 12 or 24V DC
Operating voltage range: -10% to +30% of nominal supply range
Power consumption: 50 mA max.
Operating temperature: -25°C to +55°C (-13°F to 131°F)
Relative humidity: max 93%

Waterproof: IPx6

Supported connection protocols: SeaTalk^{ng}: NMEA 2000 (certified) (via DeviceNet adaptor)

Sensitivity: High sensitivity – acquisition down to -162dBm

No. of channels: 50

Satellite Differential Type: WAAS (United States); EGNOS (Europe); MSAS (Japan); GAGAN (India)

Differential acquisition: Automatic

Position accuracy (95%): <15m

Position accuracy with SDGPS (95%): <5m

Speed accuracy (95%): < 0.3kt

Time to first fix from cold start: < 2 minutes (< 45 seconds typical)

Geodetic Datum: WGS84

E32153 RS130 External GPS Sensor



SCANSTRUT INSTALLATION SOLUTIONS FOR RAYMARINE MARINE ELECTRONICS

From mounting a radome on your yacht to a satcom antenna on your powerboat, Scanstrut have solutions for quick, easy and great looking installations for Raymarine electronics.

- Satellite TV antenna mounts
- Instrument mast pods
- Helm pods for instruments multifunctional displays
- T Series Thermal Camera mounts for mast radar arch installations
- Radar antenna mast, pole and radar arch/coach roof installations

Scanstrut solutions for Raymarine electronics are available from Raymarine.



ORDERING INFORMATION

X10023-SCA	Dish mount for STV60 (inc. base seal)
X10026-SCA	0° to 12° adjustable base wedge for satcom
X10118-SCA	Dish Mount for STV33 (inc. base seal)
X10120-SCA	4m through-deck pole system
X10309-SCA	Mast Pod Carbon 3x Maxi Inst.
A80103	Deck Pod: to 8" displays (white)
A80104	Deck Pod: 10" + 12" displays (white)
A80105	Deck Pod: 15" displays (white)
A80106	Mast Pod: 3 x standard (white)
A80107	Mast Pod: 4 x standard (white)
A80108	Mast Pod: 2 maxi instruments (white)
A80109	Mast Pod: 3 maxi instruments (white)
A80110	Helm Pod: 3 x standard (white)
A80111	Helm Pod: 4 x standard (white)
A80112	Helm Pod: up to 8" displays (white)
A80113	Helm Pod: 10" + 12" displays (white)
A80114	Helm Pod: 15" displays (white)
A80115	Helm Pod: 8" screen + 4 standard instruments; 12" screen + 2 standard instruments (white)
A80117	Single GPS / VHF antenna mount (fits all models)
A80118	Mast Mount for T Series and Navigator
A80119	Camera Power Tower 150mm
A80120	Camera Power Tower 300mm
A80121	150mm (6") Stainless PowerTower®
A80122	130mm (5") Aluminium PowerTower®
A80123	Deck Seal: connectors up to Ø16mm
A80124	Deck Seal: connectors up to Ø21mm
A80125	Deck Seal: connectors up to Ø21mm
A80126	Deck Seal: connectors up to Ø30mm
A80127	Deck Seal: multiple cables up to Ø18mm
A80128	Junction Box IP67 cable seal pack
A80129	Junction Box: 5 screw-down terminals
A80130	Junction Box: 10 fast fit terminals

For further information about Scanstrut installation solutions, contact your nearest Raymarine stockist or visit our website www.raymarine.com

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PHOTO: SUNSEEKER INTERNATIONAL



PHOTO: SEALINE

PHOTO: JOE MCCARTHY

SUGGESTED SYSTEMS

Whether you're fitting out a 17' fishing boat or a 100' cruiser, Raymarine has the equipment you need: single screen solutions or networked systems, with the performance and ease of use you expect from Raymarine.

Over the next few pages, you'll find suggested systems for powerboats and sailboats of various sizes; we understand that boat owners have their own particular preferences and each boat its own particular needs – we hope the systems will give you an idea of what is possible and provide you with an inspirational starting point to specify your own Raymarine system.

System diagram identification

- Radar arch installation
- Flybridge installation
- Main helm installation
- Below deck



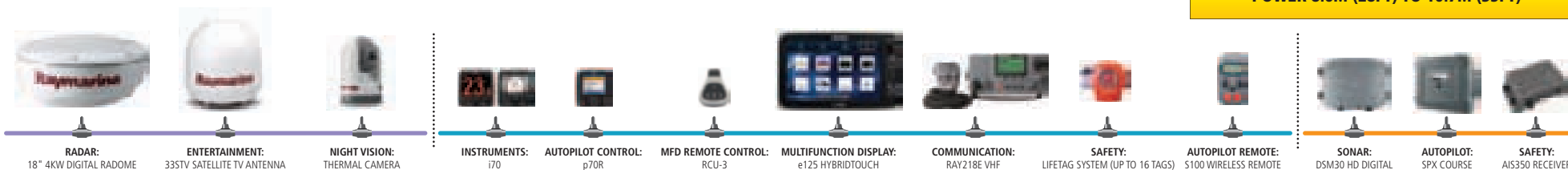
Power

POWER UP TO 8.6M (28FT)

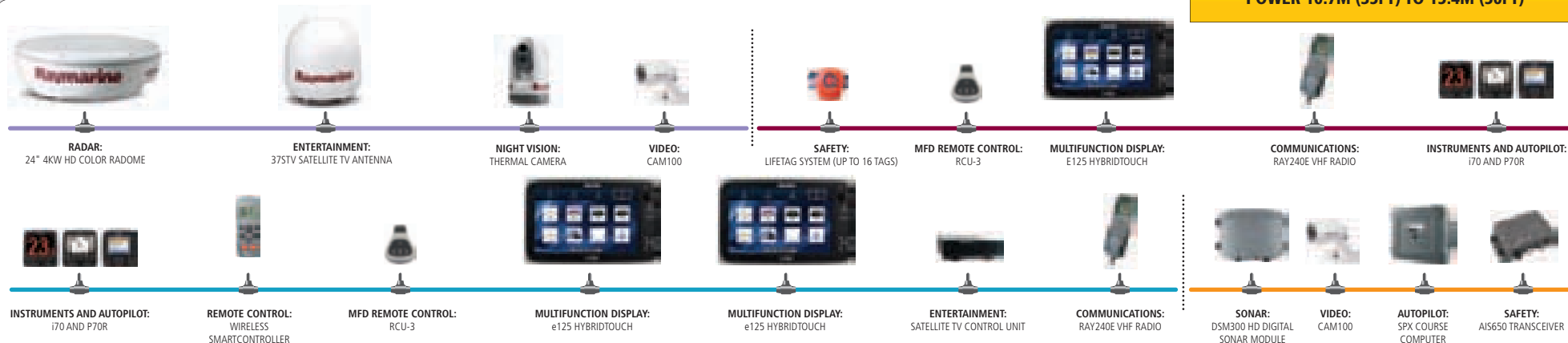


Note: Product images shown in suggested system diagrams are not to scale

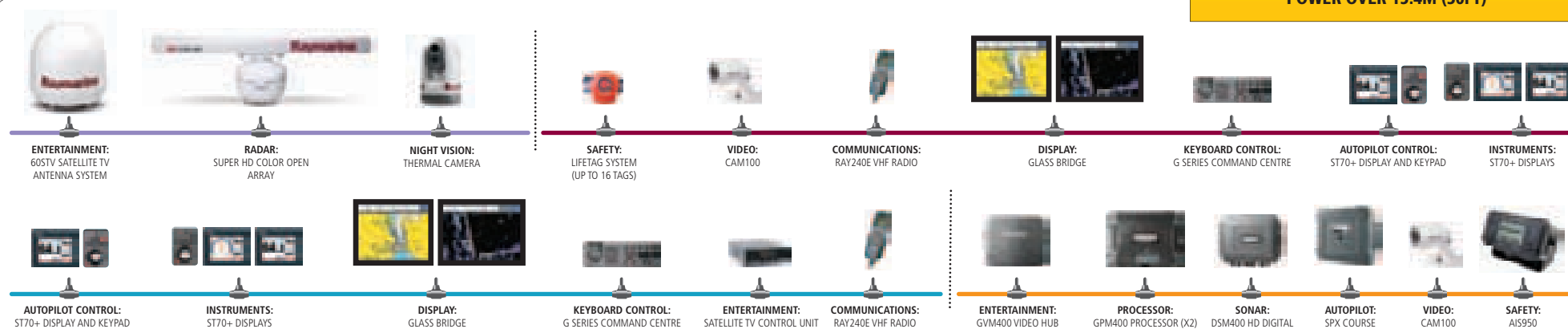
POWER 8.6M (28FT) TO 10.7M (35FT)



POWER 10.7M (35FT) TO 15.4M (50FT)






POWER OVER 15.4M (50FT)

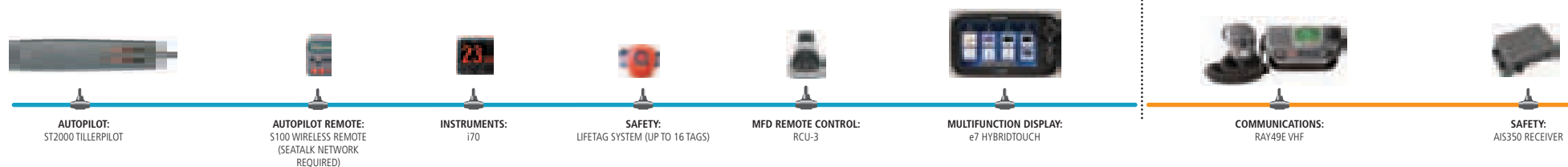


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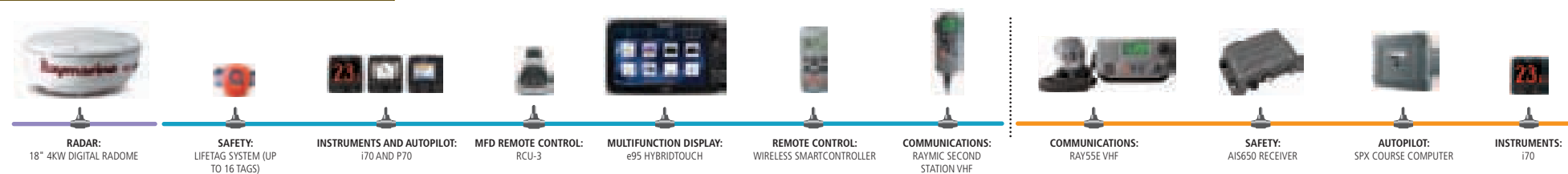
Sail

System diagram identification  Above deck installation  Cockpit installation  Below deck/chart table installation

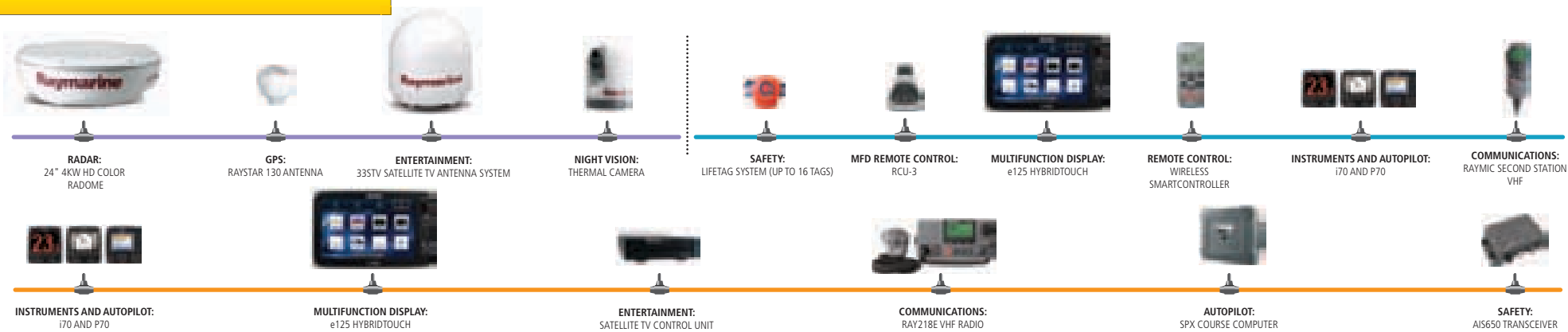
SAIL UP TO 8.6M (28FT)



SAIL 8.6M (28FT) TO 10.7M (35FT)



SAIL 10.7M (35FT) TO 15.4M (50FT)



Note: Product images shown in suggested system diagrams are not to scale

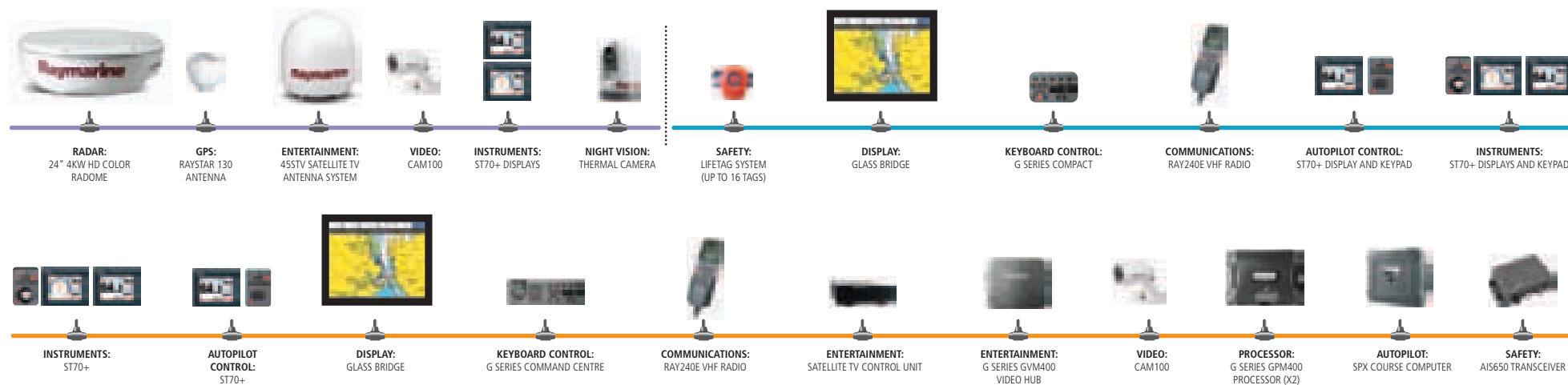


PHOTO: SUNBEAM YACHTS



PHOTO: OYSTER MARINE UK (LTD)

SAIL OVER 15.4M (50FT)



Note: Imagery for illustrative purposes only. Product images shown in suggested system diagrams are not to scale



PEACE OF MIND WHEREVER YOUR BOATING TAKES YOU: RAYMARINE WARRANTY AND REPAIR

Raymarine's service commitment of outstanding warranty and technical support now offers you even more; Standard Limited Warranty can become Extended Limited Warranty by the simple action of registering your new product online, extending 2 years warranty into three for FREE.

In some countries and for most products, Raymarine also offers Onboard Limited Warranty Service, a Warranty Service Program and Advanced Warranty Replacement. View the warranty policy details or contact your Raymarine dealer to see if you are eligible.

For Raymarine warranty information, visit our website
www.raymarine.com

Imagery for illustration purposes only

Getting your **FREE** Warranty Upgrade

When you register your new Raymarine electronics online within 90 days of purchase, your standard 2-year warranty coverage is extended to three years at no additional cost.

This new extended warranty program demonstrates Raymarine's confidence in the high standards of quality and reliability that have been designed into its products across the board.

To complete online registration please have your product model number and serial number available.

Benefits of On-Line Product Registration

- Protect your investment. You'll always have access to your product serial numbers in case something happens to your equipment or your boat.
- Access technical support. Get the support you need from Raymarine's product experts. Registering online gives us the complete picture of your navigation system, and lets us serve you better.
- Stay connected to Raymarine. Registration entitles you to a wide range of benefits such as notifications of product updates, newsletters, invitations to Raymarine owners-only events and more.





www.raymarine.com

Product Information. Visit www.raymarine.com to find the ideal Raymarine equipment for your boating needs:

- the very latest news
- product information
- software upgrades
- owner's manuals
- worldwide dealer locations

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